The Oil and Gas Journal

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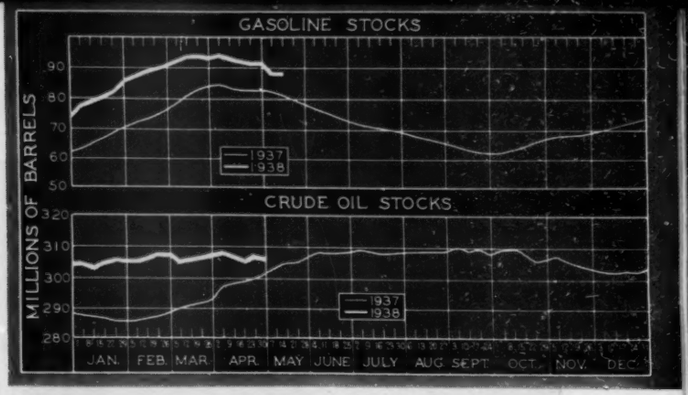


Large Cut in Output This Week

A REDUCTION of 33,364 barrels daily in national crude oil production last week will be followed by a decline of more than 100,000 barrels daily this week, provided the curtailment programs of several of the large oil-producing states are carried out. The Saturday shutdown which became effective May 14 in Texas is only partially reflected in the production data for last week. Oil producers in that state, as in the case of the Sunday shutdown, which has been effective for several weeks, are permitted to spread the Saturday closing through the entire week so that the significance of this additional cut will be shown first in production figures for the week ending May 21.

CRUDE PRODUCTION *3,341,011 barrels daily average—down 33,364 barrels.*

CRUDE STOCKS *307,147,000 barrels as of April 30—down 507,000 barrels.*

GASOLINE STOCKS *88,647,000 barrels as of May 14—down 817,000 barrels.*

REFINERY RUNS *3,170,000 barrels daily week ending May 14—up 90,000.*

Taking into consideration this Texas situation and assuming that Oklahoma's and Kansas' output will be brought closer to their state allowables and that California's production will be reduced further, crude production reports at the end of this week may show a total decline of 150,000 barrels daily, bringing crude output east of California well under 2,600,000 barrels. This is a more drastic cut than some statisticians believe is necessary, although in line with the demand estimates of oil-producing states for the area not served by California production. If made fully effective, there is no doubt that the curtailment will be reflected in substantial reductions in crude inventories over the remainder of the month. It also will serve to maintain a low level of crude runs to stills at refineries and will assure the needed withdrawals from motor fuel inventories.

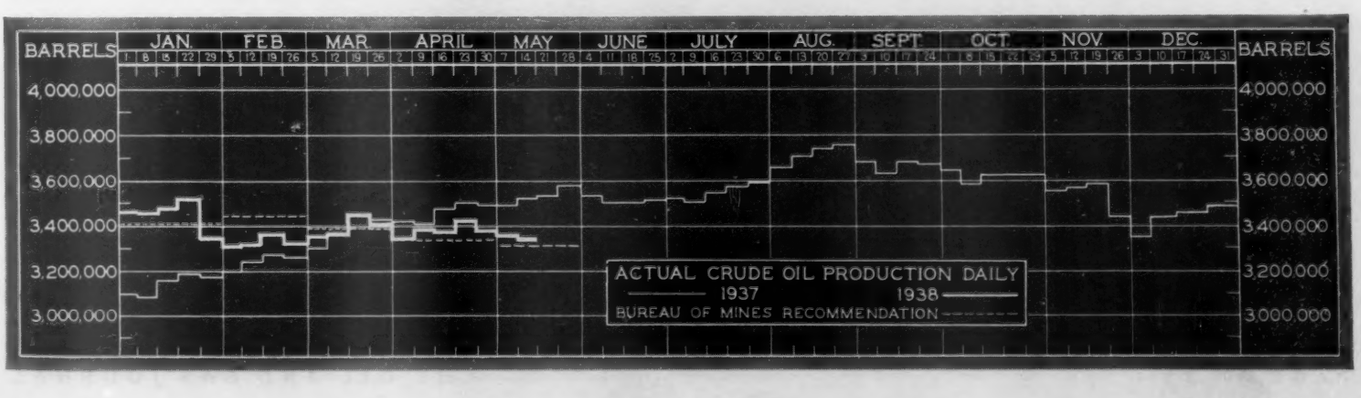
The California situation is more serious than that of the rest of the country. While last week's crude output was 50,000 barrels daily under the recent high, it is still far in excess of estimated needs. Two recent analyses have shown that the state's production should be brought under 600,000 barrels and continue at the lower level until a healthy inventory situation has been attained. The West Coast over the past several months has seen a constantly rising production in the face of a decline or leveling-off in export and domestic shipments of finished products.

The next needed development in markets is higher prices for gasoline in practically all refining areas and a firmer market for the heavier oils. While there is a better feeling in regard to gasoline there have been no sustained advances in any refining area. The recent weakness in natural gasolines has not been helpful to the motor fuel market. Demand for tractor fuels continues and brisk business for several months is in prospect.

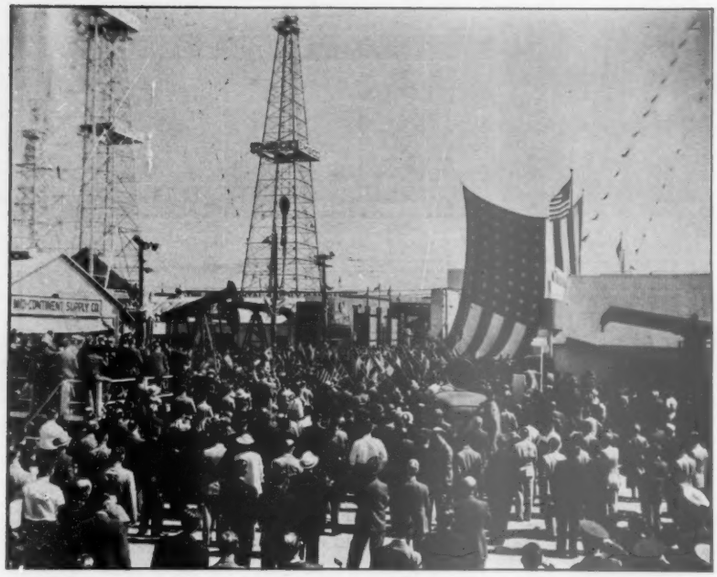
Daily Average Production for Week

	May 14 1938	Bur. Mines May est.	May state allowables	May 7 1938
Oklahoma City	122,100			119,975
Fitts	52,875			53,375
Remainder of state	309,675			313,425
Total Oklahoma	484,650	510,300	405,000	486,775
East Texas	425,657			433,899
West Texas	197,873			200,100
North Central Texas	97,961			109,548
Texas Panhandle	61,631			64,451
East Central Texas	101,585			104,749
Gulf Coast Texas	328,776			334,150
Southwest Texas	106,096			107,800
Total Texas	1,319,579	1,322,500	1,130,600	1,354,697
North Louisiana	83,255			79,695
Gulf Coast Louisiana	178,450			182,549
Total Louisiana	261,705	243,200	251,450	262,244
California	687,750	667,800	624,735	690,500
Kansas	174,450	168,700	160,000	162,900
Arkansas	42,570	44,500		48,555
Eastern fields	147,100	139,800		144,100
Michigan	55,307	52,600		56,294
New Mexico	103,960	103,900	103,900	103,140
Rocky Mountain area	63,940	64,800		65,170
Total United States	3,341,011	3,318,100		3,374,375

Decrease, 33,364 bbls. daily.



Biggest Oil Gets Off to



Flag-raising ceremonies as the exposition opened

By T. F. SMILEY

Engineering skill and inventiveness in the designing of oil industry equipment; business daring and resources in its manufacture; technological achievement; wise administrative planning of a purposeful board of directors—all are visible in the tenth International Petroleum Exposition, which opened in Tulsa last Saturday, to continue eight days. The impression which this year's biennial oil fair makes upon the visitor was expressed for thousands by A. Edward Barit, president of the Hudson Motor Co., Detroit, Mich., when he said it "left him gasping."

Mr. Barit was one of the speakers at colorful opening ceremonies held at the north end of Drake Drive, main highway of the little city which is the exposition. The newness and immensity of the show created a feeling of confident assurance which pervaded the whole program, conducted before a throng which packed every available foot of space.

While troops of Boy Scouts, bearing flags of 53 nations, symbolic of the world-sweeping character of the exhibition, lined the sides of the drive, the biggest American flag in existence, 80 by 60 feet, was raised slowly between two tall derricks flanking the street. As a breeze caught the giant banner and the stars and stripes billowed majestically overhead, hats were removed; a band struck up the national anthem; a color guard from Joe Carson Post of the American Legion took a position in front of the speakers' stand; a circling airplane hummed over the grounds; aerial bombs exploded, releasing small flags, which glistened in the sunlight—and the greatest oil show in history was declared open.

Taking the place of Mayor T. A. Penney, who was ill, John Rogers, president of the Tulsa Chamber of Commerce, greeted the visitors in the program conducted from the speakers' stand. "Tulsa welcomes you with open hearts and open arms," he said.

Governor E. W. Marland, former head of the Marland oil interests merged with the Continental Oil Co., extended a greeting for the state. "Oklahoma owes much to Tulsa for bringing so many visitors from other states and nations to come here and learn about our oil industry," he said. "The nation is under obligation to Oklahoma for its generous production of its natural resources. And Oklahoma is under obligation to the enterprising sons of Tulsa who have created the greatest of all shows."

International Aspect

Vanich Pananda, of Bangkok, Siam, who had flown from San Francisco to be on time, appeared on the program as re resenting its international aspect. He did not make a speech, but bowed smilingly after being introduced by T. P. Gilmer, master of ceremonies. Mr. Pananda is director of the fuel oil department, ministry of defense, for the Siamese government.

"We are renewing today the most important contact between the oil industry and its service of supply," said Robert S. Kerr, of Oklahoma City, president of the Oklahoma and Kansas division of the Mid-Continent Oil and Gas Association. "In the final analysis you are dependent upon the oil industry, and its continued progress is dependent to a great extent upon you. Business was recently described by John W. O'Leary, chairman of the executive committee of the Chamber of Commerce of the United States, as the bringing together of things and men; the application of work and skill for production of goods and services that are useful to others. Everyone who assumes the hazards of such an undertaking, and at his own cost makes provision for carrying it forward, is a business man. Most certainly those engaged in the petroleum industry, and its allied industries, are preeminent American business men.

"Since the first well was drilled in Pennsylvania 79 years ago, the available oil reserves have steadily increased. The uses and consumption of oil have grown steadily larger until today one day's output from the more than 350,000 producing wells in the United States is far in excess of the annual production of a few decades past. Thus, within a comparatively few years, this typical American enterprise has been transformed from an adventure—interesting only to the boldest—into a far-flung industrial undertaking, providing direct economic support to approximately 7,000,000 of our citizens.

"As the custodian of a vast amount of the invested capital of the American people, as an employer of over 1,100,000 workers, as a paymaster whose payrolls aggregate over $1,500,000,000 annually, as a taxpayer whose 1937 operations produced $1,327,000,000 in taxes, the petroleum industry must be universally recognized as a contributor of great economic consequence to the welfare of the citizens of the United States.

"This great International Petroleum Exposition, the greatest trade fair of any industry in the world, bringing here for exhibition and demonstration thousands of types of equipment and items of supply used daily in the petroleum business, gives testimony of the billions of dollars being spent in trade and commerce for raw materials and labor.

"The petroleum industry is proud of this great contribution to the development of this nation. It is proud of this contribution toward the building of a happier and a more prosperous people. However, it is fitting for us to remember, in passing, that we must take cognizance of the obstacles and troubles which have been surmounted in accomplishing these things which make up the present-day petroleum industry. Although many have been surmounted, many remain.

"We should firmly resolve to join hands—as oil producers, as oil refiners, as oil marketers, and as suppliers of equipment and services—in one single, unified endeavor to overcome the present and future troubles of the industry, to the end that this industry, those allied with it, and those great areas of population economically dependent upon it, may continue to survive and prosper."

Mr. Barit dwelled on the close relationship between the oil and automotive industries. "You frequently hear people marvel at the way in which the automobile has been developed into the luxurious and sturdily built vehicle it is today," he said, "but what too few people realize is that behind practically all of this spectacular

W. G. Skelly and Hal Gruber congratulate A. W. Gordon upon his 60 years of service in the oil industry. Mr. Gordon is 96 years old

Show Yet Held Colorful Start

Vanich Pananda, official representative from Siam, divides his attention for the moment between President W. G. Skelly and the photographer

progress are equally spectacular achievements of the petroleum industry.

"Each development of automotive engineering has brought with it new problems in lubrication—new challenges to the skill and ingenuity of your organizations. Each challenge has been met with a product to satisfy the new need. Thus the petroleum industry has helped to make possible many major mechanical advancements since the days of the first 'horseless carriage.'

Governor E. W. Marland of Oklahoma welcoming guests to the state

"As a result, we of the automobile industry appreciate the magnitude of your achievement to date and rejoice with you over your accomplishment. But beyond all this to my mind the exposition this year has a still greater significance in that it demonstrates beyond the power of mere language the confidence of your industry in the soundness of our country and its future possibilities.

"I believe that as a means of correcting the economic ills which we are suffering from at the present time we need more than anything else confidence on the part of the ultimate consumer so that he may feel free to resume normal consumption and I know of no better way to bring this about than through just such an example of confidence as this great petroleum industry is exhibiting here at the present time."

"If it were possible for the people of the United States who think this country is in a tailspin, to come out here to this oil exposition and see what it really means, they would regain their faith in our country and in our form of social life," declared H. C. Merritt, vice president of the Allis-Chalmers Manufacturing Co., Milwaukee, Wis. "This industry, which is so truly American, which was born and developed in the United States, is certainly a symbol of what is possible in this country and what can be done in the future. This exposition is a combination of faith in the industry which supports it, and it is a symbol of what is possible in the future if the faith of the people in this industry and those who supply it is maintained. If the people of this United States could see the tremendous display of technical equipment they would again say our industries are safe and we are going forward faster than we have in the past."

W. G. Skelly, president of the Skelly Oil Co., Tulsa, and president of the exposition, was the last speaker on the program. "We who stand here today," said Mr. Skelly, "can appreciate the magnitude of this great industrial and scientific display, by far the greatest in the history of the exposition. To those of us in the oil industry it represents the scientific and engineering ingenuity and progress that make possible the entire oil industry, one of the largest three in the country, an industry that employs directly more than 1,000,000 people and which last year contributed in taxes 11 per cent of the total revenue of the federal, state, county and city governments.

Debt to Manufacturers and Scientists

"The manufacturers and scientists who have accomplished the improvements in methods represented by this vast display are directly responsible for the discovery, production and manufacture of the products that make possible the operation of every automobile, airplane and virtually every modern ship at sea.

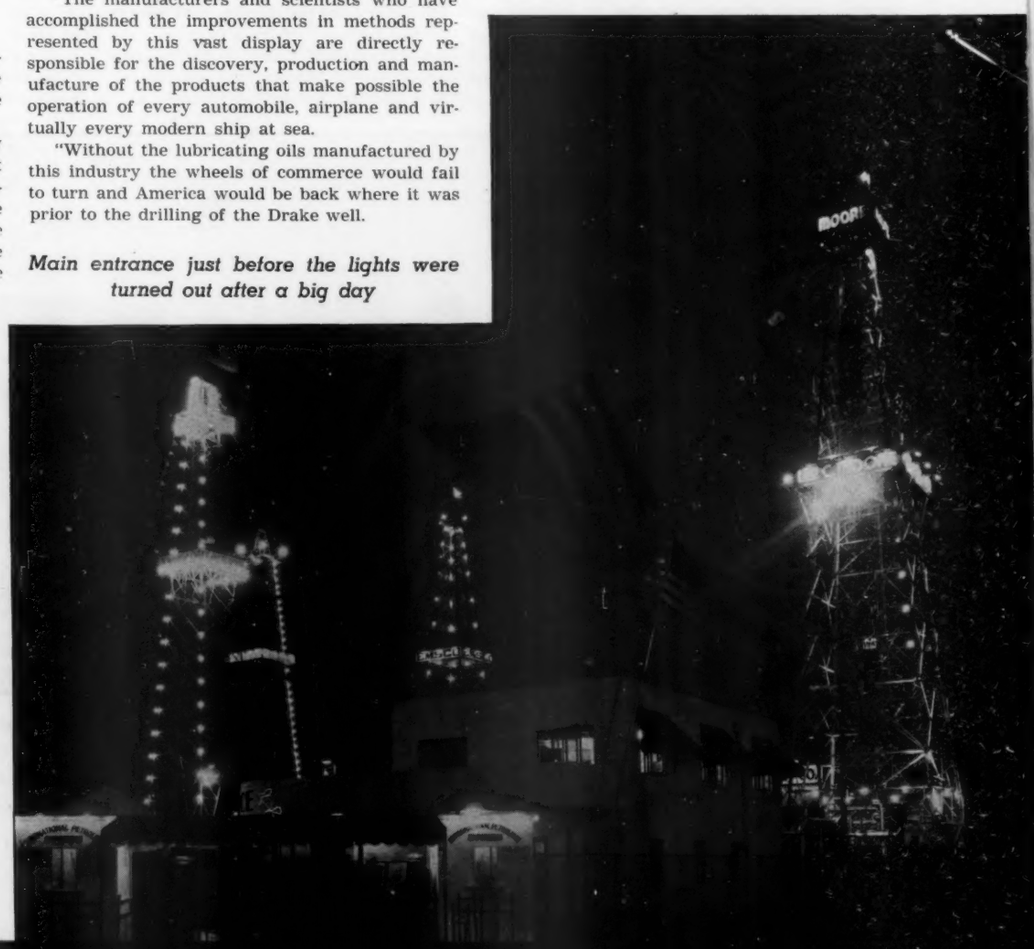
"Without the lubricating oils manufactured by this industry the wheels of commerce would fail to turn and America would be back where it was prior to the drilling of the Drake well.

"Without these modern methods of exploration, production, refining and marketing of oil, as exemplified by the exhibits, the quality and the price of both gasoline and lubricating oils would be so prohibitive that only a handful of people could enjoy the modern comforts that are now the possessions of virtually every citizen."

At the close of Mr. Skelly's talk, and just before the ceremonial flag-raising, a bugler sounded taps and all stood with bared heads for one minute of silent tribute to "the men of the oil industry who have passed on to their reward."

The paid attendance on the opening day, ac-

Main entrance just before the lights were turned out after a big day



H. C. Merritt, vice president of Allis-Chalmers who was one of the principal speakers opening the exposition

cording to William B. Way, general manager, was 21,962, in contrast with 15,171 on the opening day of the last preceding show in 1936. It was predicted that with fair weather the total attendance would shatter all previous records, just as the show itself has done. It was pointed out that exclusive of the thousands of sightseers pouring through the gates, the exposition has what might be termed a fixed population—that is, for eight days—of about 2,000. This is made up of the men in charge of the exhibits and buildings. In just one hour on the opening afternoon 1,780 persons passed through the new Hall of Science, where are displayed working models from every branch of the oil industry. In one hour on Sunday afternoon 2,572 persons visited the building.

Safety Precautions

Police, firefighting and first-aid arrangements, carefully worked out, emphasize the urban color taken on by the grounds. There would have been hopeless confusion, especially on the opening day, but for excellent traffic management. As automobiles, many of them occupied by persons unfamiliar with locations, streamed through the various entrances, uniformed officers directed them into the right roads and guided them to parking spaces. Other policemen were assigned to patrol certain streets. Incidentally the streets bear names reminiscent of epochal oil fields. Cushing, Fitts, Seminole, Beeville, Signal Hill, Oklahoma City, and Tyler are among them.

The opening day saw many visitors from foreign lands besides the guest from Siam who appeared on the speakers' stand. They included Karl Grosse, Wietze, Germany, general manager of the German Petroleum Co., Berlin, and also representing the German government; Paul Obergfell, manager of the New York office of the Ita Edeleanu Co., Ltd., Germany; Hary von Rautenkranz, general manager of the International Tiefbohr Co. (I.T.A.G.), Celle-Hannover, Germany; Verner Mueller, an official of Alfred Wirth & Co., Erkelenz, Germany; Prof. Kozaburo Kurihara, Akita Mining College, Akita, Japan; Rodolfo Viesca Arizpe, engineer of Tampico refineries, Petroleos Mexicanos, Tampico, Mexico; Jesus M. de la Garza Cardenas, production manager Petroleos Mexicanos, Mexico City; Rodolfo M. Fernandez, technical consulting engineer, Petroleos Mexicanos, Mexico City; Guillermo Barriga Guendulain, secretary of the commission, Tampico, Mexico; Vicente Cortes Herrera, general manager, Petroleos Mexicanos, Mexico City; Rafael Michel, representing the Mexican government, Mexico City; Rene Berg, Association Francaise des Techniciens du Petrole, Paris.

Manager Way said the exposition plant as it now stands, after extensive enlargement and modernization performed during the past year, represents an outlay of some half-million dollars. The exhibits, he said, were valued at more than $10,000,000, compared with exhibits valued at $10,000 in the initial oil show held 15 years ago in improvised buildings in two blocked off streets. Contracts for the sale of exhibits, involving thousands of dollars, were closed this week, Mr. Way said.

Hall of Science

Were you ever curious to know how geologists and geophysicists went about prospecting for gas and oil? Did you ever wonder how the interior of the earth looks in the regions where oil has been found? Or knowing the oil had been discovered and wells drilled did you ever puzzle about how the production man brought this fluid to the surface? If, as a layman, you have been asking yourself these or many other questions about the oil industry the answers will be found in a visit to the Hall of Science at the International Petroleum Exposition held in Tulsa this week.

This great exposition can be conveniently divided into two major parts. There are exhibits of machinery and equipment for those directly interested in the oil industry and the educational exhibit within the Hall of Science for the person interested in the basic scientific background of the industry with many working models showing its operations. It includes a unique collection of models, dioramas and miniature apparatus of particular interest to users of petroleum products.

The exhibits in the Hall of Science are roughly divided into four classes: Geology, production, transportation and refining. At the right of the main entrance, the geological display starts with a model of the East Texas oil field. A complete section of an average well in East Texas is shown by means of cores from the several formations. To indicate how the geologist and paleontologist identify these different kinds of rocks specimen fossils are also displayed in such a position as to make easy the correlation. This is just a starter for the visitor immediately finds he is in the midst of a number of models, maps and illuminated sections all having to do with the principles of geology.

For instance there are models of an almost symmetrical anticline and a symmetrical anticline mounted on tables so that one can see on all sides of these structures and secure a good idea of how they would appear in place thousands of feet under ground. On the wall is a long illuminated drawing of the simple types of oil field structures which indicate how oil may be trapped in the folded strata in the earth. In the middle of this section there is an octagonal display stand upon which are mounted many kinds of rocks, fossils and cores.

This salt dome model was made so that the derricks of the oil field were placed above the mass of salt in such a position as to indicate where the oil had been found around the edges of this great plug of rock salt. Near this salt dome model is another interesting case in which numerous sections of rocks and fossils have been mounted so they can be examined through high powered microscopes just as the paleontologists examine them in the laboratories.

The next section was devoted to geophysical exploration. To indicate how the elastic waves set up by the discharge of dynamite at the surface will travel through the rocks and be recorded at some distant point by a seismograph, models were hung on the wall and tiny lights arranged in strings and so lit as to trace the path and time of the movement of the elastic wave. These models showed several types of this phenomena and one included the models of the field equipment used by seismograph parties. It was all very enlightening and instructive and explained in a simple manner some of the very intricate methods used by geophysicists in exploring for structures which might be favorable for the accumulation of gas and oil.

Next comes instructions in well drilling and completion. There are drawings in large plaques on the walls of cementing operations showing how a well that has developed water can be repaired. Also how drilling mud is used in drilling rotary holes and how wells are shot with nitroglycerin after they are drilled. Most laymen

Germany was well-represented. Here are Hary von Rautenkranz of the International Deep Well Drilling Co., Ltd.; Karl Grosse, vice president of the Deutsche Erdoel Antiengesellschaft and representative of the German government, and Werner Mueller, with the Alfred Wirth Co. of Erkelenz

have the idea drilled holes are straight from surface to the oil reservoir. However, this is not the case and models and drawings show how the holes twist and turn as they penetrate the earth and how the bottom of the hole may be at some point distant from the opening on the derrick floor. Instruments are also displayed which show how these holes are surveyed and their true courses recorded so the driller and the production men know just how to case and tube them for producing gas and oil.

Having completed the oil well, the next step is to illustrate how the oil is brought to the surface. This is done by a very excellent model of four wells being pumped through a central power plant. The surface equipment is all in place in relative position over the producing formation and the wells are glass tubes so the visitor can see the movements of the rods and working barrels at the bottom of the wells and note how the oil is pumped up and delivered to the tanks on the surface.

The water-flooding model shows how water is pumped into one well and moved through the underground formation containing oil driving this oil ahead of it to another well through which it is pumped to the surface.

Passing to the next section the committee in charge of this exhibition has set aside space for 14 of the engineering societies in which they have displayed literature and books published by each of the societies. The adjacent section has been devoted to the transportation of gas and oil and there are several illuminated maps of natural gas and oil and gasoline pipe line systems mounted and hung upon the wall. Along another wall there is a long model of the various operations involved in laying a pipe line.

A gas compressor station with modern equipment is also shown in this section. These stations are erected at points along a gas line to compress and pump the natural gas through the pipe line from the gas fields to the cities where it is to be used.

The U. S. Bureau of Mines has an exhibit of helium gas and pictures of one of its plants at the Hall of Science well worth seeing. It is announced that on Friday, May 20, a red rubber balloon about 30 inches in diameter filled with helium gas will be released from the International Petroleum Exposition grounds.

The bureau has also provided interesting exhibits depicting hazardous conditions which might arise in various branches of the oil business. They include methods for preventing these hazards and means for combating fires and explosions. A rescue truck containing masks, breathing apparatus, and other equipment is included.

The refining division is well represented by a large working model of a complete skimming plant. Oil is processed through the furnaces, towers, chemical treating plant, and gas absorption equipment. All of the equipment is made of glass permitting the visitor to see what goes on inside a refinery.

The oil in the system is agitated with air and this is done at well-chosen points to give the effect of heating the oil and separating it into fractions by distillation. The procedure goes on within the lines from the furnace to the towers, within the towers, and throughout the treating equipment.

The refinery includes a modern lubricating oil processing unit of the wax-press type. The entire model of the refinery is 30 feet long and 10 feet wide.

A typical miniature modern natural gasoline plant is also shown. This model is complete to show the visitor what equipment is needed to comprise a plant. Various tanks complete the refinery and natural gasoline plant display. A feature of the tank display is a model of a 100,000-bbl. Hortonspheroid. Augmenting the display of equipment are many large photographs and murals.

A series of pictures and a model solvent extraction plant has caused considerable comment because of the timely interest. Other auxiliary equipment include control and recording instruments, laboratory testing apparatus, and automatic tank gauges. The liquefied gas industry is represented by a propane self-shifting and starting unit. The asphalt industry is presented through a series of books and pictures which explain the use of its products.

In another section of the Hall of Science a complete model of an actual refinery is shown and here the relative space devoted to the various refinery units may be studied.

W. L. Little, assistant drilling superintendent with the Tropical Oil Co. at El Centro, Columbia, S. A., and B. B. Block, of the International Petroleum Co. at Negritos, Peru, S. A.

Foreign Delegates

GERMANY:

Karl Grosse, general manager, German Petroleum Co., Berlin; also representing German government, Wietze.

Paul Obergfell, manager Ita Edeleanu Co., Ltd., New York City.

Hary Von Rautenkranz, general manager, International Tiefbohr Co. (I.T.A.G.), Celle-Hannover.

Verner Mueller, Alfred Wirth & Co., Erkelenz.

Herbert Diel, German consul, St. Louis, Mo.

JAPAN:

Kozaburo Kurihara, professor, "Akita" Mining College, Akita.

MEXICO:

Vicente Cortes Herrera, general manager, Petroleos Mexicanos, Mexico City.

Rodolfo Viesca Arizpe, engineer of Tampico Refineries Petroleos Mexicanos, Tampico.

Jesus M. de la Garza Cardenas, production manager Petroleos Mexicanos, Mexico City.

Rodolfo M. Fernandez, technical consulting engineer Petroleos Mexicanos, Mexico City.

Guillermo Barriga Guendulain, secretary of the commission, Tampico.

Rafael Michel, representing Mexican government, member of board of directors, secretaria de la Econimia Nacional Guadiana No. 2 Col. Cucuhtemoc, Mexico City.

Luis Angulo, G., communication department, Mexico, D. F.

Antonio Cardenas, department of communications, Mexico, D. F.

SIAM:

Vanich Panananda, Siamese government director; director, fuel department, Ministry of Defense, Bangkok.

FRANCE:

Rene Berg, Association Francaise des Techniciens du Petrole, Paris.

ENGLAND:

Mark Watkins, regional director, Carrier Corp., International Division, London.

ARGENTINE:

Socrates Broullon, civil engineer, Buenos Aires.

Francisco Rappallini, chief engineer, Buenos Aires.

VENEZUELA:

Joseph A. Holmes, Caripito.

R. E. Watson, chief petroleum engineer, Maracaibo.

CUBA:

Alfredo Smissen, Santiago de Cuba.

The Hall of Science was the mecca for thousands of visitors. A total of 312 items were shown obtained from 40 sources. The Museum of Science and Industries, Chicago, was the largest single contributor. View shows Dr. C. K. Francis, technical editor of The Oil and Gas Journal and vice-chairman of the committee which arranged for the Hall of Science, Gilbert Rhode of New York and Dr. Carlton of Chicago, head of the museum there

SPARKS FROM THE NEWS

AT THE POST

The Seagraves (Tex.) Chamber of Commerce starts a "buy a barrel of oil" movement to relieve excessive stock situation. With 64 barrels sold it has only several million barrels of crude and products yet to take care of.

GRANITE SHOWING

Southeast Georgia's wildcat, abandoned last week, had no showings of oil or gas, but it did establish the fact that part of the state has a stratum of granite starting at 4,347 feet.

TIME FOR DEEDS

This week will determine just how effective are the new state proration orders of which so much has been heard recently. Analysts agree that promises no longer will satisfy the industry's needs in regard to curtailment.

MORE AND BETTER

Recent expenditures by California refiners and natural gasoline manufacturers, including work under way, total $35,000,000, reflecting the need for more and better finished products from a barrel of crude or a cubic foot of gas.

THE MARCH OF TIME

Acme

An independent dealer is building a small service station on the site of the one time Forest Hill Rockefeller home in Cleveland, Ohio. He does not handle Standard products

NEW OR OLD

The Wasson field in Yoakum County, West Texas, has a 4-mile extension or else a new pool has been discovered.

FACTS AND FICTION

The most amazed visitors at the petroleum exposition are the gasoline consumers from the non-oil states who received their petroleum education from the movies or stock promoters' literature.

WATCH IT GROW

Already a robust organization as evidenced at the Tulsa convention last week, the National Oil Scouts Association has set its 1938-39 goal at 1,000 members.

PROOF

Those who do not believe that the public is interested in how oil is found, produced and refined should see the crowds packing the Hall of Science at the exposition at the rate of 2,000 an hour.

"TAX"ICAB

The man who put "tax" in taxicab was a prophet who should have been without honor anywhere. The A.P.I. says the cab owner's gasoline tax bill is six times that of the average motorist.

JUST WISHING

With natural gasoline selling for 2 cents a gallon (84 cents a barrel) in the Mid-Continent, producers wish there were some way of leaving it in the crude, still selling at 98 cents to $1.30 a barrel.

TO THE WEST

A wildcat showing indicates a test in Finney County will open the farthest west production in Kansas—only two counties from the Colorado line.

GAS CONSERVATION

Natural gas men at New Orleans were told oil conservation programs were adding to their gas reserves. They have plenty of gas and are now ready for more markets.

New Processes to Expand Products Made by Natural Gasoline Industry

James W. Cowles of the Shell Petroleum Corp. receiving the 1938 E. I. Hanlon award for outstanding service to the natural gasoline industry. The presentation was made by J. A. La Fortune. Mr. Cowles' name will be placed on the placard held by Mr. La Fortune

By W. T. ZIEGENHAIN

The characteristic enthusiasm for its products that has been present in the past meetings again permeated the sessions of the seventeenth annual convention of the Natural Gasoline Association of America, held in Tulsa on Wednesday, Thursday and Friday of the past week. There it was stated that natural gasoline supplies directly and indirectly close to 12 per cent of the total motor fuel production of the country and, according to several opinions expressed on the floor of the convention, this proportion will be increased over the immediate future through the extended use of polymerization, alkylation, isomerization and hydrogenation on natural gasoline components.

Large scale plant operations were described and the importance of their development was portrayed by R. C. Alden, of Phillips Petroleum Co., who said both crude oil and natural gas must now be considered as plentiful and cheap sources of hydrogen and carbon as base materials for the manufacture of motor fuels, chemicals and industrial materials. The specific reference to the importance of natural gas was emphasized by his statement to expect that for every pound of crude oil being produced there is also produced four-tenths of a pound of natural gas.

Theoretically, if the methane and heavier hydrocarbons contained in natural gas could be converted to motor fuel fractions, there would be need for only about two-thirds of the present crude supply to yield the same quantity of motor fuel. The "if," he indicated, was a big one, however, since about 60 per cent of natural gas is methane and it is not possible economically to process the material at present.

S. S. Smith, of Shell Petroleum Corp., when called upon to discuss a very enlightening paper on polymerization by Arch L. Foster said, "Apparently the natural gasoline industry views the process with reservations. I might say that we have not witnessed a single problem in operating polymerization units which we did not face previously while cracking."

On this same subject, John W. Newton, vice president of Magnolia Petroleum Co., said in his address of welcome opening the meeting: "As was pointed out, use of the process by refiners may influence consumption of natural in several ways. Plants polymerizing only excess light ends, at the same time holding motor fuel production at a constant figure, will increase overall volatility. Polymerization of unsaturated butanes now present in gasoline will result in decreased light ends, with a corresponding rise in demand for natural gasoline. Application of the process is an individual problem, dependent on local conditions, and the collective result cannot be foreseen."

Members of the Natural Gasoline Supply Men's Association who met to elect new officers for 1938. Shown above are, front: V. C. Canter, D. E. Fields, D. W. McKay, W. F. Lowe. Second: L. S. Allen, J. A. Lupfer, B. W. Vinson, W. D. Moorer, H. F. Goodenough. Third: E. H. Triphaus, R. C. Beam, M. F. Waters, G. B. Lane, R. R. Bush, K. J. Langley. Officers chosen include: D. E. Fields, president; H. J. Kerr and W. Woobank, vice presidents; E. H. Triphaus, treasurer

Recent Refinery Improvements

Discussing the influence of recent refining improvements upon trends in natural gasoline, Mr. Newton said: "The trend toward motor fuels of higher volatility and better octane continues, in step with improvements in motor design. Increases in front-end volatility have been accompanied in recent years by constant or somewhat lower vapor pressures of housebrand and premium brand gasolines. An augmented demand for natural gasoline should result, contingent on the practices of cracking, reforming, etc. Use of lower vapor pressure naturals should also increase, particularly during the summer period, in order that the refiner may maintain required vapor pressure-distillation relationship on finished motor fuel.

"Advancing octane requirements have caused the antiknock quality of natural to become increasingly important. Natural gasoline has heretofore been priced on a volatility basis, disregarding inequalities in octane. It is possible, in the future, the natural manufacturer producing gasoline of lower than average octane number for a given vapor pressure may be penalized.

"Segregation of technically pure hydrocarbons is now possible, due to advancement in design of fractionating equipment not heretofore commercially available. Through separation of ethane, propane, butane, iso-pentane, and normal pentane, the refiner is better able to utilize the fractions for polymer plant feed, blending agents for 100-octane gasoline, volatility control, and chemical manufacture. This development may lead to an augmented demand for either raw natural gaso-

line, or the separate components, depending on requirements of each particular plant."

These and other suggested changes in gasoline plant and refinery operations tend to emphasize the soundness of promoting the use of more volatile motor fuels.

It has been recognized that maximum antiknock value and mileage have been sacrificed in the present automobiles because of the ease with which volatile fractions escape from the system. It is also true that some systems are worse than others and to prove this and to determine the extent of these losses, the Natural Gasoline Association of America, in cooperation with the Western Petroleum Refiners Association, ran a series of road tests over the past year referred to now as the "Pawhuska Road Test." The great bulk of this work has been under the direction of T. W. Legatski, of Phillips Petroleum Co., who in summary said:

"During the course of this work, 251 tests were made on eight 1937 model cars and one 1936 model. The tests involved some 10,000 miles of driving and required about three months to complete. Aside from the development of a number of new or modified testing procedures, the information obtained was deemed sufficient to warrant the following general conclusions with respect to current models of cars:

"1. The permissible rear tank fuel vapor pressure for trouble-free operation under the worst conditions at an atmospheric temperature of 100° F. is about 9 pounds for the three popular priced 1937 cars. All but two of the remaining cars indicated possible vapor pressures close to 8 pounds, the two exceptions showing permissible vapor pressure values near 7 pounds. The vapor pressure values are those for normal summer gasoline since with more extreme fuels some of the values were lower.

"2. The average temperature rises through the fuel systems of 1937 cars do not appear materially different from those reported for earlier models.

"3. The overall losses from representative fuel systems, when using the gasoline normally sold for the atmospheric temperatures then prevailing, will range from approximately 4 per cent to some higher value, depending upon the 'trouble-free vapor pressure requirement' of the car in question and upon the type of driving. Starting with an overall loss of approximately 4 per cent as average for cars with trouble-free vapor pressure requirements of 8 to 9 pounds, the probable loss appears to increase at the rate of 1 per cent additional for each drop of 1 pound in the 'trouble-free vapor pressure requirement.' These losses are minimum losses, i.e., losses for trip driving with no stops between successive fillings of the tank. Losses to be expected for the condition of about-town driving with its repeated starts and stops are substantially greater, a limited number of observations indicating that they would be of the order of 2½ times those observed for trip driving.

"4. The corresponding overall loss in octane number suffered through fuel evaporation will be appreciable. A drop of 0.25 to 0.3 A.S.T.M. octane number for per cent loss through evaporation appears to be the least that could be expected from these tests. This means that the A.S.T.M. octane number drop suffered on average summer gasoline in cars having vapor pressure requirements of 8 to 9 pounds will be approximately 1 octane number while losses of 2 octane numbers could conceivably be expected in the case of cars of extremely low 'trouble-free vapor pressure requirements.'"

Considerable discussion developed following Mr. Legatski's paper but in general it led to the conclusion that the natural gasoline industry must continue to carry the torch for more volatile motor fuels and effective support of the program must come from automotive manufacturers before its benefits may be realized by the oil industry or by the motoring public.

Prepared discussion of Mr. Legatski's paper was read by B. R. Carney, who presented the views of W. G. Lovell, J. M. Campbell and M. J. Mulligan of General Motors Corp. research laboratories but here the authors simply questioned the extent of the vapor losses from the average automobile tank and, in support of their lower evaporation-loss figure, described the method used for determining these losses, which they contended should give accurate loss data. (See page 82, this issue.)

The discussion was closed by remarks by G. H. D. Montgomery, of Quinplex Corp. Another paper of unusual interest was presented by H. H. Beeson, of Sabine Valley Gasoline Co. (see page 97, this issue).

The part of the program of the greatest practical value for most of those attending was the Kinks session on Friday morning, at which more than 20 operating ideas were explained. Drawings were thrown on a screen by lantern slides; in a large number of cases the kinks were explained by the inventor himself or by one of his associates. Altogether, more than 50 kinks had been submitted this year and the judging committee reported that these were of high order as a class. The Kinks session was presided over by F. E. Fisher, Skelly Oil Co., who was the chairman of the judging committee. Other members of the committee were: J. R. Jarvis, Lone Star Gasoline Co.; R. E. Baker, Shell Petroleum Corp.; Anson W. Dwen, J. E. Crosbie, Inc.; W. F. Fulson, United Gas Pipe Line Co. In conducting the contest, the various phases of plant operation had been grouped in four classifications. Owing to the lack of entries in Class "C," prize money allotted to it was used for additional prizes for the other classes. Prizes awarded were as follows:

Grand prize, $25, D. B. Young, superintendent, J. E. Crosbie, Inc., Fittstown, Okla., "Engine air filter and humidifier."

Class A

First prize, $15, C. F. Turbeville, chief engineer, and Graydon Gower, repairman, Phillips Petroleum Co., Oklahoma City, "Low or under speed indicator for gas engines."

Second prize, $10, C. C. Gibson, gas tester, and M. C. Blair, boiler fireman, Phillips Petroleum Co., Oklahoma City, "Improvement on Clark main bearings."

Third prize, $3, J. G. Williams, chief engineer, gas booster station, Phillips Petroleum Co., Oklahoma City, "Improvement on governor valve of a gas engine, especially the Pickering governor."

Fourth prize, $2, B. F. Gilstrap, J. E. Crosbie, Inc., St. Louis, Okla., "Governor for Type 10, Bessemer gas engine."

Class B

First prize, $15, F. Piland, Shell Petroleum Corp., Skellytown, Tex., "Gauge glass heater."

Second prize, $10, Hubert C. Hunter, plant chemist, Skelly Oil Co., Lyman, Okla., "Sampling device."

Third prize, $3, Hubert C. Hunter, plant chemist, Skelly Oil Co., Lyman, Okla., "Graduate and thermometer protector."

Fourth prize, $2, D. B. Young, superintendent, J. E. Crosbie, Inc., Fittstown, Okla., "Gas and oil ratio controller."

Class D

First prize, $15, G. D. Tidwell, plant clerk, Skelly Oil Co., Lyman, Okla., "Air conditioner."

Second prize, $10, Walter Sutton, welder, Skelly Oil Co., Carter Nine, Okla., "Pipe reconditioning rack."

Third prize, $3, E. L. Parsley, field supervisor, Skelly Oil Co., Lyman, Okla., "Air compressor."

Fourth prize, $2, Rex Morgan, chief operator, and H. N. Miller, repair helper, Phillips Petroleum Co., Oklahoma City, "Method of repairing deteriorated gas line."

A special prize of $10 was awarded to J. R. Green, chief repairman, Skelly Oil Co., for submitting nine entries of merit in the contest.

Officers of the association were reelected including J. A. La Fortune, Warren Petroleum Co., president; Ray Miller, Hanlon-Buchanan, Inc., first vice president; J. R. Jarvis, Lone Star Gas Co., second vice president, and R. E. Beckley, Standard Oil Co. of California, vice president for the Pacific Coast territory.

Those directors whose terms expire this year were unanimously reelected following their nomination by the committee composed of T. R. Goebel, George P. Bunn and E. L. Peck. The list of these directors follows: Glacier Production Co., Glen Rose Gasoline Co., F. R. Long, Inc., Coltexo Corporation, Hanlon-Buchanan, Inc., Indian Territory Illuminating Oil Co., Kansas Power & Light Co., Phillips Petroleum Co., Skelly Oil Co., Standard Oil Co. of California, United Gas Pipe Line Co., Warren Petroleum Corp., and L. H. Wentz—Oil Division.

Following the custom of previous years the Natural Gasoline Supply Mens Association furnished noon lunches for those who attended the convention on Thursday and Friday and also provided for a dance Thursday night. As guests of Warren Petroleum Corp. those who remained after the convention closed were given a dinner on the International Petroleum Exposition grounds and were afforded an opportunity to preview the exposition grounds and exhibits.

Motorists Paid $761,998,000 Gasoline Tax Last Year

WASHINGTON, D. C. — American motorists paid $761,998,000 in gasoline taxes and inspection fees to the states in 1937 compared with $691,420,000 in 1936, the Bureau of Public Roads reported. Gasoline consumption totaled 19,218,121,000 gallons, a 7.6 per cent increase over 1936.

The increase was attributed to larger number of vehicles on the road, increase of the tax rate in four key states, and an increase in gasoline consumption, exclusive of aviation brands. Only Nebraska and Tennessee reported decreases in annual consumption.

Obituaries

EARL W. READER, 50, well-known Rocky Mountain oil man, was fatally wounded by accidental discharge of a rifle while on a hunting trip in Wyoming.

FRANK MAIRE, 68, Lima, Ohio, an oil producer with interests in Ohio, Michigan, Kansas and Oklahoma, died at Iola, Kans., May 15. He was en route to Tulsa for the International Petroleum Exposition and was accompanied by his wife.

ISAIAH LEEBOVE, 42, general manager of Mammoth Producing & Refining Corp., died suddenly May 14 at Clare, Mich. He formerly had oil interests in Oklahoma and lived in Tulsa, removing to New York later, and then to Michigan.

CHARLES ELMER BUSHNELL, 80, treasurer of Atlantic Refining Co., Philadelphia, when he retired, and a nephew of Henry D. Bushnell, general counsel of Northern Pipe Line Co., New York, died of a heart attack last week while on a train from Saranac Lake to New York. He was the son of Daniell Bushnell of Pittsburgh, a pioneer in the oil industry.

Deeper Cuts in Allowables Are Made to Avert Recession

By JAMES McINTYRE

The action of one relatively small refining company in cutting the price of oil 25 cents on its 6,500-bbl. runs had a healthy effect on the oil business generally, even if it hit a few operators where it hurts most.

Closely following the price reduction by the Kanotex Refining Co. in two counties in Kansas and one in Oklahoma there was a general rush to remedy a very serious situation.

The Kansas Corporation Commission promptly ordered a reduction in the allowable production of that state to 160,000 bbls. a day. This was a 13,000-bbl. daily reduction from its previously set figure. The Oklahoma Corporation Commission, which had fixed May production at 460,000 bbls. per day, reduced the allowable to 405,000 bbls. The Texas Railroad Commission went through with its two days a week shutdown and called a meeting for Tuesday, May 17, to discuss the question of continuing the additional one-day shutdown through the summer.

The South Penn Oil Co. and the Tide Water Associated Oil Co., largest buyers in the Allegany-Bradford district in the Pennsylvania Grade fields, announced a reduction in their purchasing program to take effect June 1 after which date they will buy 75 per cent of the base figure named in their purchasing agreements with producers. The field has for some time been subjected to cuts in runs by local refiners. The Bradford-Allegany district produces considerably more than two-thirds of all the Pennsylvania Grade oil brought to the surface in New York, Pennsylvania, Ohio and West Virginia.

In Illinois, where production per well was cut some time ago in the Centralia field pipe line proration spread to the Dix pool in Jefferson County, and in the Louden or Beecher City pool in Fayette County, two of the recently discovered fields. It is said the pipe lines are taking about 26 bbls. per well per day as a maximum in the three fields named.

The probability of a big production in the new Birk City pool in Henderson County, Kentucky, has alarmed operators in that state who have only stripper wells, and it is expected that some action will be taken to control the output of that field if it proves to be more than a small pool in area. The discovery well started at 1,200 bbls. a day and 11 operations were started soon after the first completion was reported.

Resumes Ratable Taking

The first result of the additional 55,000-bbl. cut in allowables in Oklahoma was the action of the Carter Oil Co. in restoring ratable taking in all northern fields in which it buys oil. The company had reduced its purchases in southern Oklahoma but found it necessary to reduce its takings in all fields from leases that averaged more than 10 bbls. per day per well. In a statement issued on Saturday the company's position was thus given:

"The emergency order of the corporation commission of May 12, 1938, which is to remain in force during May, affords us an opportunity to restore the principle of ratable taking to the extent that our action will achieve that result in the fields from which we are now taking oil. Our market-demand situation has not improved, but we propose to do what we can to maintain ratable taking. Accordingly, as soon as the corporation commission releases its figures on lease and well allowables under its emergency order, this company will run oil from the wells and properties with which it is connected in strict conformity with the emergency order. From this notice, we exclude the Tussy and Wildcat Jim areas by reason of the quality of oil produced therein, and in respect of these pools our letter of March 7, 1938, remains in effect. Of necessity, our course after May will have to be determined by the market demand for the state which the corporation commission establishes and the manner in which that demand is allocated among the prorated pools."

In reducing the allowables to 405,000 bbls. per day the Oklahoma Corporation Commission decided to make a horizontal cut in all fields. In arriving at pool reductions, W. J. Armstrong, conservation officer, started to adjust allowables in fields where pipe line proration had been instituted by purchasers, in order to insure ratable taking from all wells and leases. After these adjustments the remainder of the cuts would be applied with the same yardstick in all fields. As the first 10 days of the month carried an allowable of 460,000 bbls. per day, and the remaining 21 days 405,000 bbls. per day, the average for the month will be about 422,767 bbls. per day. Mr. Armstrong was of the opinion that all pipe line proration in the state would be wiped out by the action of the commission in further reducing the allowable.

Art L. Walker, secretary of the Oil States Compact Committee, wired appeals to the governors of Arkansas and Louisiana to curb production in their states.

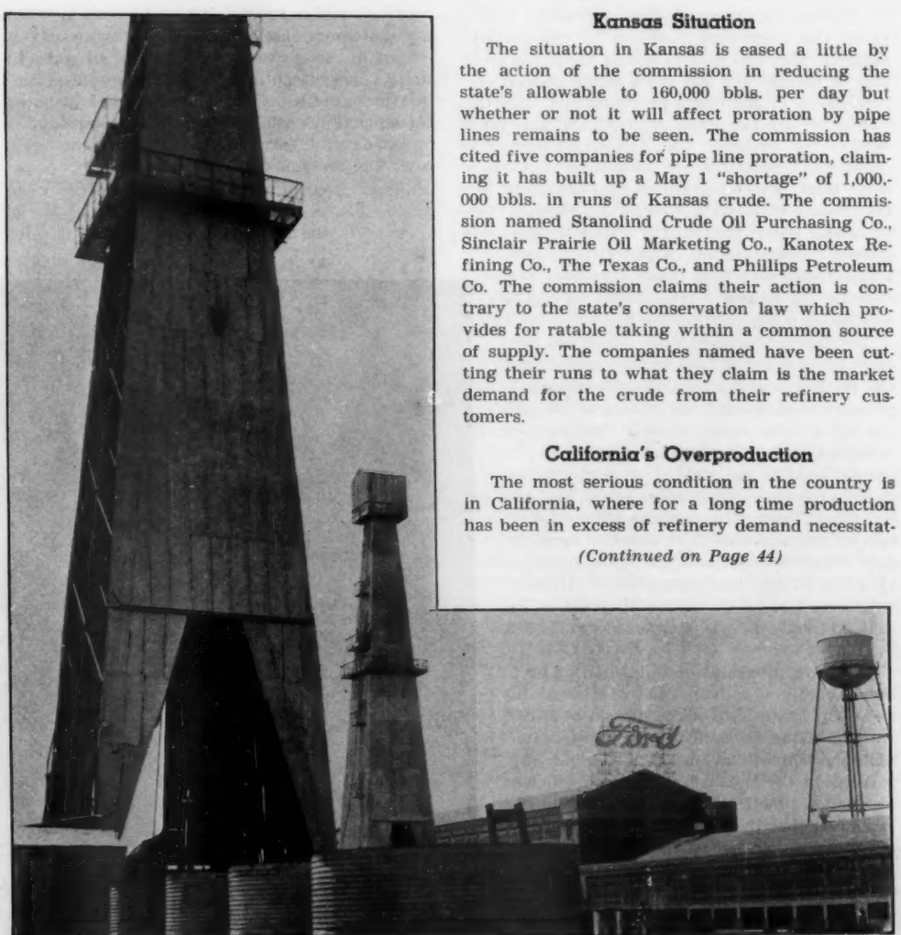
Kansas Situation

The situation in Kansas is eased a little by the action of the commission in reducing the state's allowable to 160,000 bbls. per day but whether or not it will affect proration by pipe lines remains to be seen. The commission has cited five companies for pipe line proration, claiming it has built up a May 1 "shortage" of 1,000,000 bbls. in runs of Kansas crude. The commission named Stanolind Crude Oil Purchasing Co., Sinclair Prairie Oil Marketing Co., Kanotex Refining Co., The Texas Co., and Phillips Petroleum Co. The commission claims their action is contrary to the state's conservation law which provides for ratable taking within a common source of supply. The companies named have been cutting their runs to what they claim is the market demand for the crude from their refinery customers.

California's Overproduction

The most serious condition in the country is in California, where for a long time production has been in excess of refinery demand necessitat-

(Continued on Page 44)



Triangle Photo Service

Drilling wells at Wilmington, California

Conservation and Utilization of Topics at New Orleans Annual

By NEIL WILLIAMS

NEW ORLEANS, La., May 14.—Prevention of waste and providing greater market outlets and utilization of natural gas were the keynote subjects at the annual convention of the Natural Gas Department of the American Gas Association in New Orleans, La., May 9-12. Attended by more than 900 gas men, representing all branches of the industry, including production, transmission and distribution, from all parts of the country, the four-day session went on record as one of the most constructive ever held.

Support of the oil and gas industry's efforts to effect more efficient development and production practices that gas waste in the recovery of oil might be minimized was pledged at the convention. Conservation, it was brought out, is one of the most vital problems before the industry. Speakers urged that closer study and consideration be given this problem, and that, at the same time, more extensive and also more efficient utilization of gas be promoted.

A conservation symposium sponsored by the production committee was one of the featured sessions. This was held as one of the group meetings of the opening day prior to the general convention. N. C. McGowen, president of United Gas Public Service Co., Houston, Tex., and also president of the American Gas Association, served as chairman. Among the speakers were E. O. Bennett, chief petroleum engineer, Continental Oil Co., Ponca City, Okla.; Hugh M. Stalcup, vice president, Skelly Oil Co., Tulsa (see Mr. Stalcup's address on page 50 this issue); C. K. Eilerts, research engineer, U. S. Bureau of Mines, Bartlesville, Okla.; and representative of regulatory bodies of the various states.

Mr. Bennett outlined work which has been done, particularly by his company in the Tepetate field, Acadia Parish, Coastal Louisiana, in pressure maintenance and return of gas production to the sand. Material benefits are being and will be derived from this work, he pointed out, in the way of increased oil recoveries, reduced production costs, and conservation of gas. The company expects to obtain an extra $5,000,000 at Tepetate from the sale of gas returned and left in the reservoir after the oil has been exhausted. This otherwise would be blown to the air and lost, he said, not only as gas but as energy to lift the oil.

Phase relationships of fluids and gases in the reservoir of combination wells were discussed by Mr. Eilerts of the Bureau of Mines. He told of the research in attempts to determine the composition and properties of hydrocarbons in the reservoir that more efficient production practices might be developed. He explained that the knowledge of phase relationships in the reservoir and the behavior of these fluids under various field conditions is essential to effective conservation of oil and gas.

Representing the regulatory bodies of the various states were E. M. Meyers, engineer, who read a report prepared by William J. Armstrong, conservation officer, Corporation Commission, Oklahoma; A. M. Crowell, chief conservation agent, Conservation Department, Arkansas; F. M. Blair, engineer, who read a report by V. E. Cottingham, chief engineer, oil and gas division, Railroad Commission, Texas, and W. F. Chisholm, petroleum engineer, Department of Conservation, Louisiana. Each told of the development of proration and the work being done in conservation of oil and gas reserves in their respective states.

Papers delivered before the association on "Combination Gas Dehydration and Desulfurization Plant," by T. S. Bacon; "Welding of Pipe Lines," by F. C. Hutchison, and "Acid Treating of Gas Wells," by M. E. Chapman will be found in the Engineering and Operating Section of this issue.

Mr. Chisholm, who closed the meeting, pleaded for cooperation of gas operators in enforcement of conservation regulations, and issued a warning that unless certain practices, particularly in regard to close spacing as followed in some instances, are discontinued, conditions will be such that in Texas the Sunday shutdowns will be reversed and instead of production being shut in on Sundays, it will be open on Sunday and shut down the remainder of the week.

Mr. McGowen, president of the American Gas Association, in presentation at a later meeting of a report of the subcommittee on gas well deliveries, urged that more careful study and more intensive efforts be directed to conservation of oil and gas reserves. He said new problems in conservation are being created particularly by the opening of an increasing number of deep fields in which the production at high pressures makes it difficult to classify the wells as oil or gas. Production of these deep, high-pressure fields is conducive to waste of gas unless properly handled. He referred to research being made on phase relationships of hydrocarbons in the reservoirs of such fields as being an important undertaking, because the question of whether these wells are gas wells with a rich distillate content, or whether they are fluid wells with high gas-oil ratios has a vital bearing on waste prevention, and how the wells are to be flowed. These new-type, deeply seated high-pressure well fields constitute important natural gas reserves, and any dissipation of this gas in the recovery of comparatively small volumes of distillate is a matter of waste.

A bright future for the natural gas industry was pictured by various speakers, who predicted the next several years would witness important extensions of gas transportation systems to additional large cities, states and sections of the country at present unserved, with increased market consumption and utilization of natural gas, both industrially, domestically and commercially.

The expansion of the natural gas industry was brought before the convention in an address by Mr. McGowen at the opening general session. Significant developments during recent years have been the steady growth in consumption and utilization, substantial increases in reserves, conservation in production, transmission and utilization, successful operation of long gas pipe line systems, and extension of domestic use of gas in heating and refrigeration, together with a phenomenal rise in industrial consumption.

In production of natural gas, Mr. McGowen pointed out new high records were established in 1937 with a total output of 2.5 trillion feet. During the past decade there has been an increase in production, except from 1930 to 1933. Production in 1937 was 15 per cent greater than in 1936 and 61 per cent greater than in 1933. More than 64 per cent of the marketed production came from three states, Texas, Louisiana and Oklahoma, the percentage from these states being 31, 19 and 14.5 per cent, respectively.

Domestic utilization of natural gas has increased from 224 billion feet in 1926 to 400 billion feet in 1937, the latter figure being a 16 per cent increase over 1936. Industrial consumption in 1937 totaled 1.96 trillion feet, and increase of 67 per cent over 1933.

Present indicated natural gas reserves, based solely on known fields, total 62 trillion feet, according to Mr. McGowen. Of this amount, 47 trillion feet, or about 76 per cent, is in the southwestern states of Mississippi, Louisiana, Arkansas, Texas, Oklahoma, Kan-

Merrill N. Davis, S. R. Dresser Manufacturing Co., Bradford, Pa., president of Association of Gas Appliance and Equipment Manufacturers; and F. L. Chase, president, Lone Star Gas Co., Dallas, Tex.

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Gas Chief Meeting.

W. W. Winter, Atlanta Gas Light Co., Atlanta, Ga.; J. French Robinson, president, Peoples Natural Gas Co., Pittsburgh, Pa., and Robert W. Hendee, general manager, Colorado Interstate Gas Co., Colorado Springs, Colo., and chairman Natural Gas Department, A.G.A.

sas and New Mexico. This, at the rate of withdrawal during 1936, indicates a life of 28½ years for the United States, and about 33 years for the Southwest, not considering future discoveries.

Unitization and pooling of royalty interests in gas-producing areas as a means of facilitating more orderly and conservative development and production practices received considerable attention. There is a growing tendency on the part of gas companies to unitize lease and royalty interests. Unitization projects carried out successfully by operating companies in the Appalachian district were described by J. French Robinson, president of Peoples Natural Gas Co., Pittsburgh, Pa., in a paper at the opening general session.

Proper Spacing

Proper spacing of gas wells in a reservoir to obtain the most efficient and profitable recovery, and effect the greatest conservation of reserves was discussed by D. T. MacRoberts, United Gas Pipe Line Co., Houston, at a production committee group meeting devoted to technical phases of natural gas production. Other papers presented at this meeting included "Utilization of Natural Gas From Oil Field Operations in California," by H. P. George, Southern California Gas Co., Los Angeles (read by A. B. Newby of same company); "Latest and Most Important Problems Presented to Operators in Eastern Fields," George E. Welker, United Natural Gas Co., Oil City, Pa. (read by E. L. Rawlins); and "Acidizing Gas Wells and Shooting to Increase Production," by M. E. Chapman, Chemical Process Co., Inc., Tulsa.

Technical meetings were conducted by the transmission committee, and by the domestic sales and industrial sales groups. The transmission group programs included "Design of Liquid Separators for Natural Gas Pipe Lines," B. M. Laulhere, technical supervisor, Southern California Gas Co., Los Angeles; "Combination Dehydration and Desulfurization," T. S. Bacon, Lone Star Gas Co., Dallas, Tex.; "Recent Developments in Gas Hydrate Study and Dew Point Apparatus," W. M. Deaton, U. S. Bureau of Mines, Bartlesville, Okla.; "Recent Improvements in Electric Welding on Pipe Lines," Hal Price, H. C. Price, Inc., Bartlesville; "A New Development in Oxyacetylene Welding Pipe Lines," F. C. Hutchinson, Linde Air Products Co., Kansas City; "Practical Application of Cathodic Protection," Robert J. Kuhn, consulting engineer, New Orleans.

Major Alex Forward, managing director, A.G.A.; N. G. McGowen, president, United Gas Public Service Corp., Houston Tex., and president A.G.A.; J. H. Dunn, Lone Star Gas Co., Dallas, Tex.; standing: H. M. Stalcup, vice president, Skelly Oil Co., Tulsa; E. O. Bennett, chief engineer, Continental Oil Co., Ponca City, Okla.

Merrill N. Davis, S. R. Dresser Manufacturing Co., Bradford, Pa., president of the Association of Gas Appliance and Equipment Manufacturers, discussing developments in appliances and equipment urged the gas industry give consideration to the standardization of specifications of gas marketed as a means of facilitating the work of appliance manufacturers. Some other papers included:

"The Future of Natural Gas," Robert W. Hendee, Colorado Springs, Colo., chairman of the Natural Gas Department; "Living Up to Our Advertising Campaign," W. W. Winter, Atlanta Gas Light Co., Atlanta, Ga.; "The Association and the Natural Gas Industry," Maj. Alexander Forward, managing director, American Gas Association, New York; "Present-Day Regulation of Natural Gas Utilities," Alexander Mahood, president, National Association of Utilities and Railroad Commissioners; "New Thoughts and Old Principles," Cecil F. Elmes, Sanderson & Porter, consulting engineers, New York; "Will a Wife Tell Her Husband," David DeBard, Stone & Webster Service Corp., New York; "The Gas Industry's Stake in Air Conditioning," L. R. Boulware, vice president and general manager, Carrier Corp., Syracuse, N. Y.; "How Can We Entrench Industrial and Commercial Gas Sales?" Franklin T. Raney, Ohio Fuel Gas Co., Columbus, Ohio; "Utilization Aspects of Natural Gas," R. M. Conner, director testing laboratories, American Gas Association.

Committee reports presented were: Main technical and research committee, H. C. Cooper, president, Hope Natural Gas Co., Pittsburgh, Pa.; pipe line subcommittee, H. D. Hancock, Cities Service Co., New York; gas-well deliveries, N. C. McGowen, United Gas Public Service Corp., Houston.

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Mexican Payment Proposal Is No Solution of Problem

NEW YORK, May 17.—The impasse between private oil companies and the Mexican government over their expropriated properties became more hopelessly tangled last week when President Cardenas disclosed his terms of indemnification. He said he had offered to let the American and British companies handle 60 per cent of the Mexican production for export over a long period and that he was willing to let the companies retain a percentage of the output in the next 10 years in payment for the properties. He said the indemnity could be fixed by agreements between the companies and the government, but if the companies refused his offer the Mexican government would set the amount arbitrarily.

The companies have been steadfast in refusal to consider indemnification in oil, the only medium at the disposal of Mexico for satisfaction of the claims. This attitude has not been altered.

President Cardenas asserted the arrangement he proposed would keep Mexican production in the hands of democratic countries and at the same time permit Mexico to pay off her debt. He added that the attitude of United States and British companies seemed to be that they were either trying to overthrow the Mexican regime or were hoping to see it overthrown and hence were refusing to deal with Mexican officials.

Denying the companies had ever considered revolution, their spokesmen said acceptance of the Mexican terms would be tantamount to admitting legality of expropriation, which is being tested in the Mexican supreme court.

President Cardenas declared the Mexican people would suffer any privation rather than to give in and the "companies were quite wrong in thinking that financial difficulties in Mexico would lead to the overthrow of the government." He reiterated that the "companies never again can assume the management of Mexican oil production where it would be possible for them to meddle in internal political affairs." Mexico wants to keep the petroleum it produces in the hands of democratic nations like England and the United States, but if these countries will not accept our oil we must sell it where we can."

It was evident he considered the implied threat to sell Mexican oil to "undemocratic" countries a strong point in eventually forcing acceptance of payments in petroleum.

Asserting that 40 per cent of Mexican production is necessary for internal requirements, President Cardenas considered that whatever was necessary from the remaining 60 per cent as payment to foreign oil companies was a "generous offer." Mexico was ready to make a deal to pay the foreign and railroad debt and other obligations as soon as the boycott on Mexican oil was removed. The boycott, alone, he declared, was impeding settlement of these questions and tariff problems at the present time.

By reference to payment of Mexico's foreign obligations it was evident he expected his offer to appeal to creditors in other lines of industry. There is evidence that trade with Mexico has been dealt a blow by imposition of a boycott on its petroleum. Exporters are reported delaying shipments of general merchandise normally supplied by this country and Great Britain since they are unable to obtain satisfactory assurance of payment.

The boycott against Mexican petroleum is almost 100 per cent effective. Mexican petroleum exports have been restricted to a few thousand barrels of products and crude since March 18. The fields continue producing 10 per cent or less of their normal capacity and refinery operations are restricted to the topping plants. Overtime payments to workers have been eliminated and several hundred oil workers dismissed from duty. The oil terminals are practically shut down and employes are doing nothing more than odd job maintenance work such as painting and gardening.

The sudden action of Mexico in suspending diplomatic relations with Great Britain threatens to create a new crisis in the Mexican policy of the United States. All comment was refused at the state department. Diplomatic relationships between Latin American countries and European nations have been of interest to the United States under the Monroe doctrine, and this country has used its good offices to settle disputes. Great Britain may therefore turn to the United States for aid in obtaining payment of Mexican obligations to Great Britain.

This places the Washington administration in a very delicate position. On the one hand there is "good neighbor" policy. On the other hand, the United States has traditionally opposed suggestions by European nations to use extreme pressure to obtain concessions or collect obligations in Latin America. The British government apparently has supported British oil interests in refusing to handle any Mexican oil since the expropriation, and while American oil interests are of the same opinion this attempted boycott has never had any semblance of official American approval. As a result, Mexican feeling has been running high against the English, while officials have lavished praise on the friendly attitude shown by Washington.

The second district court at Mexico City has postponed until June 10 the hearing of the oil companies against the labor contracts.

Lovejoy and Suman Speak At Tulsa A.I.M.E. Meeting

Current proration activities of state proration bodies and operators were strongly supported by John M. Lovejoy, president of Seaboard Oil Co., and John R. Suman, vice president of Humble Oil & Refining Co., at the dinner meeting of the Mid-Continent section of the American Institute of Mining and Metallurgical Engineers in Tulsa May 12. Mr. Lovejoy outlined the present statistical situation of the industry, stressing the necessity of curtailing production and refining operations so excess inventories could be liquidated.

The guest speaker was D. C. Jackling, president of the institute, and well known to the mining industry as one of the pioneers in the development of low-grade porphyry copper ore bodies. Mr. Jackling is making the spring trip to the sections of the Institute in the Missouri River Valley and Mid-Continent area and has as his guests Messrs. H. G. Moulton, president of Brookings Institute and chairman of the finance committee of the A.I.M.E., and A. B. Parson, secretary of the institute.

The visitors spent part of Thursday afternoon at the International Petroleum Exposition and were impressed by the size of the pieces of equipment used in this industry compared with machinery common to other industries.

The new officers for the Mid-Continent section were announced at this meeting and are: K. A. Covell, chairman, succeeding C. H. Keplinger of Great Bend, Kans. First vice chairman is A. W. Walker, Stanolind Oil & Gas Co., with Foster Morrell, U. S. Geological Survey, as second vice chairman; T. C. Frick, University of Tulsa, secretary-treasurer; and the officers with R. S. Knappen, Gulf Oil Corp., M. L. Haider and C. C. Robbins, Carter Oil Co., as the executive committee.

Italian Refinery Reported Purchasing Rodessa Crude

American Liberty Pipe Line Co., affiliate of American Liberty Oil Co., is reported to have entered into a contract with the Aquila Refining Co. of Trieste, Italy, for delivery of 30,000 bbls. of Rodessa crude monthly. Delivery will be every 90 days, it was said.

Exposition Visitors Inspect Phillips New Laboratories

A two-day open house at the new research building of Phillips Petroleum Co. in Bartlesville, May 18 and 19, gave visitors to the International Petroleum Exposition in Tulsa, and others a chance to inspect one of the most complete laboratories in the oil industry. Laboratories are divided into sections, each devoted to a special branch of research. Altogether there are over 25,000 square feet of floor area on the first and second floors, allowing ample room for diversified research.

The Phillips research department, organized in 1925 with a staff of 8 men, now numbers 93 employes. Fractional analysis, polymerization, alkylation, and copper sweetening are only a few of the better known contributions to petroleum science made by this department during the past 12 years. It was Phillips research which developed "controlled volatility" or the matching of gasoline to weather temperatures.

New Tanker Commissioned For American Trading Corp.

The American Trading & Production Corp., headed by Jacob Blaustein of Baltimore, Md., has commissioned a new oil tanker of 13,900 tons deadweight. The tanker's capacity is listed at 4,700,000 gallons. It will be placed in service between Gulf Coast and north Atlantic ports.

Louisiana Commissioner Sees Need for Regulation

BATON ROUGE, La.—Conservation Commissioner William G. Rankin, in his report to the legislature, says future royalties from fully developed oil production in the marshlands and water bottoms owned by the state should be enough to liquidate its entire bonded indebtedness.

The commissioner said production and the value of crude petroleum in Louisiana last year was twice that of 1935, while the income of the state and its citizens from all forms of natural resources exceeded $200,000,000.

Louisiana's oil production from the discovery of the Jennings field in 1901 through 1937, the report said, was 759,283,551 bbls. of which more than half was produced in the past seven years. Total production in 1937 was 88,233,383 bbls., worth $114,702,187, and 61,637,940 bbls. came from South Louisiana.

Although the conservation department wishes to encourage outside capital in investing in the state's oil fields, the report continued, this desire is modified by the necessity of conserving Louisiana's great petroleum reserve by producing no more than the market will absorb.

The report said:

"If the present rate of discovery of new fields continues and the percentage of recent successful wildcats may be regarded as a criterion, indications are that a very small percentage of recoverable oil has been produced prior to this time. Therefore it would seem a conservative estimate to predict the oil reserves of this state amount to several billion barrels.

"While the gas reserves of our state are secondary in value to that of oil, the past production of gas and the known reserves have in every way kept pace with the oil development. Our total production of gas so far has exceeded 36,000,000,000,000 feet, and our gas reserves seem barely scratched.

"It is certainly a reasonable assumption to predict that we shall soon see wells producing from 14,000 to 15,000 feet in the coastal region where sediment beds that carry oil and gas are estimated in some places to be 20,000 to 25,000 feet thick."

Executives of A.I.M.E. Guests At Houston Chapter Banquet

HOUSTON, Tex.—National executives of the American Institute of Mining and Metallurgical Engineers were honored with a banquet at Houston Saturday night by the Houston chapter of the association. Honor guests included D. C. Jackling of San Francisco, president of the Utah Copper Co. and president of the association; H. G. Moulton of New York, consulting mining engineer and vice president of the association; A. B. Parsons of New York, secretary and treasurer, and John M. Lovejoy of New York, president of Seaboard Oil Corp. and past president of A.I.M.E.

George Hill, president of Houston Oil Co., toastmaster for the evening, introduced members of the various committees of the Houston chapter.

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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The Answer

A visit to the International Petroleum Exposition suggests two thoughts. First, that it is the answer to the problems which beset the world today. It represents the result of individual enterprise, supplemented by cooperation in intelligent self-interest, yet without a cent of government aid, working to the public benefit.

All these marvels of mechanical equipment, many not thought of a few years ago, others in a continuous stage of being perfected, have contributed their part to the fast moving progress of the oil industry.

Through them we have the benefits of mass production, yet at the same time permitting individual operators to have their share in all phases of the industry, with cheaper and improved products and the highest wage scale of any industry in the country.

The diagnosticians at Washington and other panacea chasers, after five years of running around in circles, might benefit from a study of these accomplishments of free enterprise.

The second thought is suggested by the surprised comment of national figures in other industries visiting the exposition, in giving their impressions of this revelation of the scope and magnitude of the technical and scientific achievements of the oil industry.

Can means be devised to present this story of the exposition to the millions of other consumers of petroleum products remote from the fields and refineries whose only contact with the industry is at the filling station and confined to the water-like product placed in the tanks of their cars and the heavier product used as a lubricant?

To start with, let this typical consumer be made familiar with the scientific data and instruments upon which all modern exploratory work is grounded. Make it clear to him that accidental drilling of a gusher commonly seen in the movies and sensational fictionized literature is a very rare exception, and that modern oilfields are the result of careful scientific studies of underground conditions, which in many cases have extended over several years before the starting of the drill.

Have him visualize a derrick as high as an office building and built to withstand a weight greater than found in most heavy industries. Let him look at power units of all kinds, generating power at one well sufficient to run a small factory in any other industry.

Acquaint him with the fact the number of wells drilled has increased recently from 25,000 to 33,000.

Explain to him the wide range of mechanical equipment required to pump over 300,000 wells and the tremendous power involved in repressuring to increase the efficiency of producing operations.

Then as to transportation, familiarize him with the size of pipe line operations in which the engines at a single station are large enough to generate electricity for a small city.

Let him follow the oil through refining operations so he may have some understanding that the manufacture of petroleum products is not a simple separation process but one of the most complicated and most scientific operations in any industry. Show him that one piece of refining equipment is so large it taxed the facilities of the railroads to transport it.

The gasoline buying and oil consuming public would find much to wonder at in this exposition, the significance of which from the consumer's standpoint is that the highly technical engineering and industrial skill which produced this marvelous equipment has enabled the oil industry not only to reduce the cost and greatly improve the quality of petroleum products but has aided also in conserving a wasting resource thereby guaranteeing against scarcity.

Stabilization of Production Subject of Inquiry

WASHINGTON, D. C., May 16.—The resolution sponsored by Senator Joseph C. O'Mahoney of Wyoming to establish a commission to investigate monopoly and the concentration of economic power probably will be approved by congress within the near future. The commission would be composed of two senators, two representatives, the attorney general, and the chairmen of the Federal Trade Commission and Securities and Exchange Commission. While the administration would prefer to have the investigation conducted by administrative agencies, it probably will not object to the formation of a commission embracing members of congress.

Meanwhile, President Roosevelt has indicated it is his desire that the primary purpose of the investigation be the discovery of methods for stabilizing production and prices and the development of means for preventing business policies which cause sharp upturns and depressions in the business cycle. While repeating his warnings against assuming that the administration is contemplating reviving the NRA code system, the President let it be known that the administration is still seeking for adequate methods for balancing production and consumption and preventing the accumulation of excess inventories such as those currently embarrassing the petroleum and many other industries. The forthcoming monopoly investigation, therefore, will probably be of the broadest possible nature and will cover the whole field of economics rather than becoming merely a trust-busting attempt.

Administrative Procedure

The recent decision of the Supreme Court in the Kansas City Stockyards rate case, which criticized the practice of some administrative agencies in restricting the opportunities for hearings, has caused all government bureaus and commissions to reexamine their procedure with the result that some of them are making drastic changes. The National Labor Relations Board particularly felt the criticism of the Supreme Court and took immediate steps to withdraw a number of its outstanding orders in order to reopen the proceedings under revised regulations for hearings. This move, however, was only partly successful because a number of the orders were already on appeal to federal circuit courts, and some of these courts refused to permit the orders to be withdrawn. The board has asked the Supreme Court to direct the circuit courts to permit it to reopen such cases.

The court's decision recognized that proceedings before administrative and quasi-judicial executive agencies of the government may take a variety of forms but insisted that in every case the business interest being regulated should have an opportunity to know exactly what are the charges against it and the regulatory steps proposed, and full opportunity to introduce and rebut evidence and to argue specific points at issue. Such procedure has been followed by most of the older regulatory agencies such as the Interstate Commerce Commission and the Federal Trade Commission, but has not always been adhered to by some of the newer administrative bodies.

The order of the court was specifically directed against findings of the secretary of agriculture regarding charges to be made at the Kansas City stockyards. This has greatly irritated Secretary Wallace because, while he issued the order shortly after taking office in 1933, the proceedings which the court criticized all took place under the preceeding administration and some two years ago he ordered the Bureau of Animal Industry to adopt a type of hearing procedure which meets the requirements of the court's opinion. Although Secretary Wallace feels that the popular interpretation of the Supreme Court's opinion is an unjust reflection upon him, other administrative agencies were quick to realize the merit of the court's views and to bring their procedures into harmony with them. The result is that in the future business men affected by federal regulatory agencies can expect fairer and more considerate treatment than they have had from some of them in the past.

Leasing Law Restrictions

An interpretation of the public land leasing act of 1935 restricting the acreage which may be controlled by large oil companies under operating contracts has been issued by Secretary Ickes. That act provides that no oil operator may hold more than 2,560 acres of public oil land leases in any petroleum structure nor more than 7,680 acres in any one state, and the secretary's ruling requires that acreage held through operating contracts with prospectors under lease must be included in computing this maximum acreage.

Although the law has been in effect since 1935, the secretary's order was accompanied by a statement describing it as "a move to end monopolistic control by the larger oil companies of petroleum production activities under the public land oil leasing laws." The ruling affects oil leases on federally owned land, particularly in California, New Mexico, and Wyoming. Prior to the 1935 act oil was developed on the public lands chiefly through the use of prospecting permits. The prospectors usually entered contracts with large oil companies on a percentage basis for the development of their leases, and there was no limitation on the number of prospecting permit areas which a single company might operate under such contracts. The 1935 act substituted a plan of longer term leases for prospecting permits but limited the acreage which any one operator might hold under lease. Secretary Ickes' ruling declares that areas formerly held without restriction under prospecting permits and operating contracts shall now be subject to the acreage limitation provisions of the leasing laws.

An exception to this limitation is provided in cases where the leases are operated under a unit plan or group development program approved by the Secretary of the Interior.

New Under Secretary of Interior

Harry Slattery, formerly personal assistant to Secretary Ickes, has been nominated by President Roosevelt to be under secretary of the department of the interior to replace Charles West, who resigned last week. Mr. Slattery is an ardent conservationist and took an active part in the senate investigations involving Teapot dome and naval oil reserves during the Harding administration. During the Wilson administration he was special assistant to the secretary of the interior, Franklin K. Lane, handling land reclamation projects, and later as counsel for the National Conservation

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New Scout Officers Set Goal at 1,000 Members in 1938-39

By DAL DALRYMPLE

With their goal set at 1,000 members for 1938-39 by the newly elected officers, delegates to the fifteenth annual convention of the National Oil Scouts Association of America concluded their meeting in Tulsa Saturday, attended the International Petroleum Exposition which opened that day and departed over the week-end for their respective assignments throughout the oil country.

LEE A. ADAMS
New Oil Scout president

The new president, Lee A. Adams, scout for Sinclair Prairie Oil Co. in the Oklahoma City district, said the association would endeavor to enroll 1,000 members before the 1939 convention, probably to be held in some Texas city. Tyler, Beaumont, Houston and Dallas are seeking the next meeting, their invitations being presented at the final business session. Selection was left to the executive committee.

Mr. Adams, the only nominee for president, was elected by acclamation, succeeding Howard Boyd, chief scout for Magnolia Petroleum Co., Dallas. He was chairman of the executive committee the past year and supervised publication of the Scout's 1938 Year Book, which was edited by M. R. Alexander of Wichita, Kans. Harry Leyendecker, chief scout for Tide Water Associated Oil Co. at Houston and first vice president of the association the past year, had been mentioned as a candidate for president but his name was not presented.

Officers Are Elected

Other new officers elected Saturday are: Kenneth B. Foresman, Gulf Oil Corp., Tyler, Tex., first vice president; Charles Wells, Carter Oil Co., Wichita, second vice president, succeeding Edgar R. Neath, Humble Pipe Line Co., Tyler; Gilbert Kennedy, Magnolia Petroleum Co., Kilgore, Tex., secretary-treasurer, succeeding Lonnie Huddleston, Shell Petroleum Corp., Wichita Falls; and Charles Bradley, the Texas Co., Tyler, chairman of the executive committee. Mr. Boyd, the retiring president, automatically becomes a member of the executive committee. W. S. Arthurs, chief scout for Skelly Oil Co. at Tulsa, originally was elected secretary-treasurer but declined to serve because of business reasons.

Nearly 400 scouts, with their wives, attended the convention. They came from Arkansas, Colorado, Illinois, Kansas, Louisiana, Michigan, New Mexico, Pennsylvania and Texas, with the largest delegation naturally from Oklahoma, the host state.

Among those present was "Uncle" Ben Nash, dean of scouts and only life member of the association. He is scout for Houston Oil Co. in the Beeville, Tex., district, and has been scouting since 1909, starting work with Higgins Oil & Fuel Co., which later became Houston Oil Co. He is said to be the oldest active field scout in point of service in the country.

From the time President Boyd called the meeting to order Friday morning until the final waltz at the annual dinner dance in the Crystal ballroom of the Mayo Hotel Saturday night, a continuous round of business, social and sports activities kept the scouts moving at as fast a pace as they use in scouting farflung wildcat operations.

City Commissioner W. F. Graham, pinch hitting for Mayor T. A. Penney who was ill, delivered the address of welcome, with response by Mr. Boyd. Edward A. Koester, divisional geologist, Darby Petroleum Corp., Wichita, spoke on "Geology and Oil Developments of Western Kansas," illustrating his talk with lantern slides. R. G. Hamilton, Schlumberger Corp., presented a paper on "Side-wall Coring in Drill Holes," a comparatively recent development in exploration methods.

HOWARD BOYD
Retiring Oil Scout president

The annual association golf tournament was held at Oakhurst Country Club Friday afternoon. Jerry Roberts, Amerada Petroleum Corp. scout at Ardmore, Okla., was medalist with a score of 82. Other high scorers included Erick Deall, Gulf Oil Corp., Houston, and Edgar R. Neath.

The scouts and their ladies were entertained at a buffet luncheon in the new cafe on the international Petroleum Exposition grounds Friday night, and inspected the numerous exhibits at the show. Friday entertainment features for the women included a bridge luncheon at the Mayo Hotel and an afternoon party at the University Club.

Gen. Baird H. Markham, director of the American Petroleum Industries Committee, New York, was the first speaker at the Saturday morning session, discussing

Scouts discussing association affairs prior to a business meeting: S. Crites, Phillips, Oklahoma City; Homer Lynn, Magnolia, Oklahoma City; John W. Chisholm, Texas Co., Wichita Falls; Lonnie Huddleston, Shell, Wichita Falls; Ed C. Harman, Seaboard, Dallas; Deb Goode, Plymouth, Corpus Christi

"Oil Taxation." W. A. Delaney, Jr., independent oil producer, Ada, Okla., spoke on "Development of Conservation and Well Spacing Laws of Oklahoma," followed by the election and business meeting. A majority of the scouts spent Saturday afternoon at the exposition.

Convention Committee

The general committee arranging for the convention and entertainment of delegates included the following Tulsans: W. S. Arthurs, chairman; R. C. Steinman, chief scout, Sinclair Prairie Oil Co.; Henry Langspecht, independent operator; H. T. Carpenter, chief scout, Ohio Oil Co.; R. B. Curran, chief scout, Carter Oil Co.; Clyde Beebe, chief scout, Shell Petroleum Corp., and T. H. Shaw, Sinclair Prairie Oil Co. Other Tulsa chief scouts and assistants contributed their part to the entertainment.

Ben Nash, only life member, and Phil F. Martyn, chief geologist, Houston Oil Co.

All members of the national association were given copies of the Year Book, which concisely summarizes the past year's developments in the oil country. The statistical information on field activity includes a compilation of information obtained by the scouts regarding all active areas—edited and re-edited, checked and rechecked so it may be as accurate as possible. It is illustrated with numerous maps, graphs and tables, and contains several special articles on acidizing, water flooding, proration and kindred subjects. A memorial page lists members of scouts who died in 1937.

The national association includes the following affiliated organizations: Arkansas Oil Scouts Association, Corpus Christi Oil Scouts Association, East Texas Oil Scouts Association, Gulf Coast Oil Scouts Association, Kansas Oil Scouts Association, Michigan Oil & Gas Scouts Association, Midland Oil Scouts Association, Mississippi Oil Scouts Association, New Mexico Oil Scouts Association, North Texas Oil Scouts Association, Oklahoma Oil Scouts Association, Shreveport Oil Scouts Association, Southern Illinois Basin Oil Scouts Association, South Louisiana Oil Scouts Association, Southwest Texas Oil Scouts Association, Texas Panhandle Oil Scouts Association and West Central Texas Oil Scouts Association.

Magnetic Storm

Tucson, Ariz., U. S. Coast and Geodetic observatory reports a moderate magnetic storm began at 4 a.m. May 14, and ended at midnight May 14, central standard time.

ALLOWABLES

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ing the storage of crude on a relatively high market.

Thoughtful operators in California have been trying to stem the flood of production in that state, but a recent 10-cent reduction in the price of diesel oils and a 22-cent cut in the price of heavy gravity oil in the Santa Maria field did much more than mere pleas to center the attention of the trade generally on the seriousness of the situation in the Pacific coastal state.

Standard Oil Co., when announcing the reduction of 10 cents per barrel in fuel oil and 10 cents per barrel in diesel prices, said, "These reductions reflect a very serious situation which exists in California owing to production of crude oil far in excess of market demands. Numerous fields are overproducing, with Wilmington contributing a large share to the excess. It is becoming more and more obvious that if the oil industry in California is to avoid very serious economic consequences there must be shown a far greater spirit of cooperation in the matter of voluntary curtailment by many producers of crude oil."

A few weeks ago R. K. Davies, vice president of Standard Oil Co. of California, warned operators that they could expect a price reduction if production continued to exceed demand and forced marketers to store crude oil or its products. Ralph Lloyd has appealed to operators several times and Lawrence Vander Leck, chairman of the Central Committee of California Oil Producers, official curtailment group, recently warned operators that, "a drastic cut back in production must be made immediately if operators are to avoid the well-known consequences of a failure to balance supply and demand." Some additional curtailment has been accomplished since that time but the Wilmington field is producing approximately 38,000 bbls. per day above its allotment and there is an 11,000-bbl. daily excess at Long Beach, and 7,500 bbls. excess at Huntington Beach.

Increased offshore shipments during April alleviated the situation to some extent and reduced the amount of oil going into storage. As the picture appears at the present time it is doubtful that the daily average production will even approach the established allotment for the month of May. There is a possibility that a price reduction may be postponed provided offshore shipments hold up and crude oil production does not show any appreciable increase.

Wilmington Greatest Offender

The Wilmington field due to the substantial thickness of oil sand will still be in the picture late in the year and therefore there will be no great change in conditions. There is every likelihood that Rio Bravo will have reached a high potential by that time and thus the production situation will still be precarious.

Marketers are reluctant to reduce the posted price of crude oil with the summer season just ahead. For this reason marketers have been making a determined effort to get producers to appreciate this condition because if the price structure breaks down during the summer months there is not much chance of restoring prices during the winter season.

The present curtailment program in California is split wide open. At Wilmington, operators apparently do not approve the allotment set by the Central Committee and therefore do not feel obligated to reduce production. One of the principal stumbling blocks to securing curtailment in the Wilmington field is that operators in the field are firmly convinced that the field has a potential of about 358,000 bbls. per day. The field cannot produce anywhere near that amount. These potentials are purely fictitious and threaten a repetition of conditions of a few years ago when the umpire's office had the state's potential around 2,500,000 bbls. per day only to find that the bottom had dropped out while operators were still thinking in terms of fictitious potentials. There are a number of 5,000- and 6,000-bbl. producers in the Wilmington field at present but they will not hold up at that rate on continuous production with all operators producing to the maximum simultaneously.

The Austin Meeting

A suit instituted by an East Texas oil company to restrain the Texas Railroad Commission from enforcing a two-day shutdown of Texas oil fields was withdrawn just before the meeting of the railroad commission on Tuesday, May 17.

Chairman C. V. Terrell came out Monday evening with a plea for a reduction in drilling operations in the state. He asked that all inside drilling be postponed until emergency period is at an end.

Drowning out a minority group which advocated federal control of the oil industry, a majority of the record-breaking crowd at Tuesday's statewide oil proration hearing at Austin expressed themselves overwhelmingly in favor of leaving their problems in the hands of the Texas Railroad Commission.

Without formal vote, the large delegation nevertheless expressed itself as favoring the continuation of Sunday shutdowns of all fields, and Saturday shutdowns if necessary, to prevent any break in the price of crude.

At the same time resolutions presented by various groups urged other states to join with Texas in drastic cuts. Commissioner Ernest O. Thompson declared he was convinced that Texas remained a white spot on the nation's business map because of the continued prosperity of the oil industry.

WASHINGTON

(Continued from Page 42)

Association he assisted in drafting legislation for the protection of water power, forests, oil, and other resources. He also served as counsel for the National Boulder Dam Association and the New York State Power Authority. He returned to the department of the interior when Secretary Ickes took office in 1933, serving in the dual capacity of personal assistant to the secretary and personal assistant to the administrator of public works, Mr. Ickes being both, and thereby has become familiar with the current work of the department. Mr. West, a former member of congress from Ohio, was appointed under secretary in 1935 but has had little or nothing to do with the work of the department. Instead, he has served as President Roosevelt's political contact man with congress and recently has spent so much of his time away from Washington that Secretary Ickes, who was never reconciled to his appointment, made his position rather untenable by calling public attention to his failure to attend to department activities and recently assigned his office quarters and staff to other officials.

Helium

Secretary Ickes, taking advantage of an inconsistency in the language of the helium control act of 1937, is using his authority to prevent the exportation of helium to Germany for the inflation of a newly completed dirigible designed for commercial use between Germany and the United States. In the law congress specified that there should be no export of helium in quantities of military importance. Secretary Ickes takes the position that enough helium to inflate a commercial airship would obviously be of some military importance.

Final Program for A.P.I. Sessions at Wichita

The completed program for the American Petroleum Institute's mid-year meeting at Wichita, Kans., May 23, 24 and 25, follows:

Monday, May 23

Committee meetings all day

Tuesday, May 24

9:30 A.M.

DIVISION OF PRODUCTION

(Sponsored by the Central Committee on Drilling and Production Practice.)

Presiding: M. L. Haider, Carter Oil Co., Tulsa.

Experiments on Fluid Capacity and Plugging of Oil-Well Screens.

R. L. Chenault, Gulf Research and Development Co., Pittsburgh, Pa.

Theoretical Consideration of the Perforation Pattern in a Screen Pipe.

J. M. Cunningham, Gulf Research and Development Co., Harmarville, Pa.

Conservation of Gravity in the Production of Oil.

S. F. Mauney, Jr., Carter Oil Co., Seminole, Okla.; and George M. Vandaveer, Jr., E. H. Moore, Inc., Tulsa.

10:00 A.M.

DIVISION OF REFINING

Presiding: Emby Kaye, Idaho Refining Co., Salt Lake City, Utah.

Elements of Waste-Water Separator Design—A Report of an Investigation Using a Model Separator.

W. B. Hart, Atlantic Refining Co., Philadelphia, Pa.

Hydrogen-Sulfide Removal:

The Use of Sodium Phenolate for Hydrogen-Sulfide Removal.

G. M. Carvlin, Koppers Co., Pittsburgh, Pa.

The Girbotol Purification Process.

W. R. Wood and B. D. Storrs, Girdler Corp., Louisville, Ky.

The Purification of Gases by the I. G. Alkacid Process and the Recovery of Sulfur by the I. G. Claus Process.

Hans Baehr, I. G. Farbenindustrie A.-G., Ludwigshafen am Rhein, Germany.

The Shell Phosphate Process for Removal of Hydrogen Sulfide.

T. W. Rosebaugh, Shell Development Co., Emeryville, Calif.

10:00 A.M.

BOARD OF DIRECTORS:

2:00 P.M.

DIVISION OF PRODUCTION

(Sponsored by the Central Committee on Drilling and Production Practice.)

Presiding: W. E. Gilbert, Shell Oil Co., Los Angeles.

Practical Dynamometer Tests.

H. N. Marsh and E. V. Watts, General Petroleum Corp. of California, Los Angeles, Calif.

Pressure Maintenance.

E. O. Bennett, Continental Oil Co., Ponca City, Okla.

Bottom-Hole Pressures in Current Oil-Well Operations.

C. V. Millikan, Amerada Petroleum Corp., Tulsa.

Tentative Equilibrium Constants for Light Hydrocarbons—A.P.I. Research Project 37.

B. H. Sage, B. L. Hicks, and William N. Lacey, California Institute of Technology, Pasadena, Calif.

2:00 P.M.

DIVISION OF REFINING

Presiding: Bruce K. Brown, Standard Oil Co. (Indiana), Chicago, Ill.

The Removal of Inorganic Salts from Crude Petroleum.

W. P. Hawthorne and H. L. Bedell, Socony-Vacuum Oil Co., Inc., White Eagle Division, Augusta, Kans.

Laboratory Control of Desalting Processes and of the Corrosion of Distillation Equipment.

L. L. Davis, J. M. Jones, and C. A. Neilson, Continental Oil Co., Ponca City, Okla.

Identification and Properties of Straightrun and Cracked Residua.

A. H. Batchelder and H. B. Wellman, Standard Oil Co. of California, San Francisco, Calif.

The Catalytic Hydrogenation of Octenes to Octanes.

Shell Development Co. and Shell Chemical Co., San Francisco, Calif.

The Antiknock Requirements of Automobiles.

T. B. Rendel, L. E. Hebl, and R. J. Greenshields—Shell Petroleum Corp., Wood River, Ill.

Wednesday, May 25

9:30 A.M.

DIVISION OF PRODUCTION

(Sponsored by the Central Committee on Drilling and Production Practice.)

Presiding: H. H. Power, University of Texas, Austin.

Well-Depth Measurements.

C. E. Reistle, Jr., and S. T. Sikes, Jr., Humble Oil & Refining Co., Houston, Tex.

Some Consequences of Close Spacing in Kansas.

E. A. Stephenson, University of Kansas, Lawrence.

Evaluation of Filtration Properties in Drilling Mud.

Milton Williams and G. E. Cannon, Humble Oil & Refining Co., Houston, Tex.

10:00 A.M.

DIVISION OF REFINING

Presiding: Arthur E. Pew, Jr., Sun Oil Co., Philadelphia, Pa.

Application of Bailey's Theory to Tube-Stress Calculations.

C. O. Rhys, Standard Oil Development Co., Elizabeth, N. J.

The Necessity for Better Construction of Oil-Heating Coils.

Fred Key and W. H. Clendenin, Key Co., East St. Louis, Ill.

New Developments in Petroleum-Storage Vessels.

D. E. Larson, Chicago Bridge & Iron Co., Chicago, Ill.

Nickel-Bearing Alloys Used in Petroleum Refining.

B. B. Morton, International Nickel Co., Inc., New York, N. Y.

2:00 P.M.

DIVISION OF PRODUCTION

(Sponsored by the Central Committee on Drilling and Production Practice.)

Presiding: J. T. Hayward, Barnsdall Oil Co., Tulsa.

Current Practices in the Selection of Oil-Field Equipment.

H. H. Power, University of Texas, Austin, Tex.

Casing Setting Depths Are Not Assured by Physical Properties of Steel.

W. M. Frame, Spang Chalfant Division, National Supply Co., Ambridge, Pa.

Summary Report of Central Committee on Drilling and Production Practice.

J. T. Hayward, Chairman.

(Note: Immediately following this session, the Central Committee on Drilling and Production Practice will meet in this same room.)

2:00 P.M.

ACCIDENT- AND FIRE-PREVENTION GROUP SESSION

Presiding: G. O. Lockwood, Cities Service Oil Co., Bartlesville, Okla.

Cooperation with Government—Its Opportunities and Responsibilities.

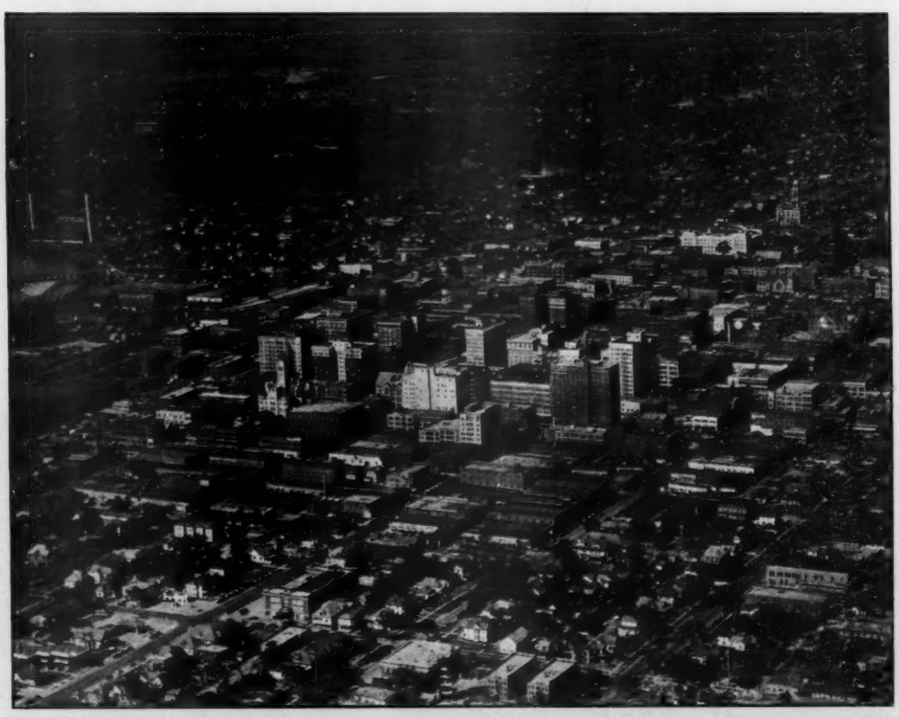
H. E. Dischinger, Shell Petroleum Corp., St. Louis.

Contract Operations—A Problem in Accident Prevention.

C. L. Swim, Skelly Oil Co., Tulsa.

7:00 P.M.

COMPLIMENTARY DINNER.



Wichita, Kans., from the air

Natural Gas News

U. S. Supreme Court Remands Gas Rate Order to State Courts

WASHINGTON, D. C., May 16.—The Supreme Court has remanded to the Texas courts the appeal of Lone Star Gas Co. from the order of the Texas Railroad Commission setting 32 cents per thousand feet as the maximum city gate rate of gas transported in interstate commerce.

The commission issued the order in 1933 directing the Lone Star Gas Co. to reduce from 40 to 32 cents its charge for gas sold to distributing companies in 275 Texas municipalities.

Chief Justice Hughes said the Texas Court of Civil Appeals had held the company had not sustained its burden of proof because it had failed to make a proper segregation of interstate and intrastate properties and business. Determination of the court of first instance could not be set aside by the application of an untenable standard of proof and in disregard of the evidence, which had been appropriately addressed to the commission's finding and had been properly submitted to the jury.

Justice Black dissented and Justice Cardozo did not participate.

The company contended the lower rates amounted to "confiscation" and attacked the $46,246,617 valuation placed by the commission on its system, saying cost of reproduction would be $73,933,405.

It also asserted that part of its gas moved from Texas into Oklahoma and back into Texas and some was purchased in Oklahoma and consumed in Texas. This, it argued, was interstate commerce and beyond state regulation.

Pennsylvania Petroleum and Gas Conference Final Program

The final program for the eighth annual petroleum and natural gas conference sponsored by the Pennsylvania Grade Crude Oil Association, the Pennsylvania Natural Gas Men's Association and the School of Mineral Industries of Pennsylvania State College, to be held at State College, Pa., follows:

Friday, May 27

9:30 a.m.—Registration, Room 104, Mineral Industries Building. The laboratories for resident instruction and research in petroleum and natural gas engineering will be open for inspection.

Petroleum Session

1:30 p.m.—Sponsored by Pennsylvania Grade Crude Oil Association and the Bradford district, Pennsylvania Oil Producers Association. Room 315, Mineral Industries Building.

Chairman: J. C. Martin, executive secretary, Bradford District, Pennsylvania Oil Producers Association, Bradford, Pa.

"Salvaging Oil Field Equipment," by Winston L. Davis, engineer and superintendent, Moore Producing Co., Bolivar, N. Y.

"Applications of Packers for Oil and Gas Drilling and Production," by John Pearson, sales engineer, Oil Well Supply Co., Oil City, Pa.

"Streamlining Industrial Safety," by E. C. Spring. Pennsylvania Manufacturers Association Casualty Insurance Co., Philadelphia, Pa., with a discussion by H. D. Brown, Jr., Brundred Oil Corp., Oil City, Pa.

"Economics of the Pennsylvania Oil Situation," by John D. Gill, Atlantic Refining Co., Philadelphia, Pa.

7:00 p.m.—Dinner (informal) followed by motion picture "The Life Story of an Oriskany Sand Gas Well in Northern Pennsylvania," with comments by J. C. Montgomery, United Natural Gas Co., Oil City, Pa.

Saturday, May 28

Natural Gas Session

9:00 a.m.—Sponsored by the Natural Gas Men's Association. Room 315, Mineral Industries Building.

"Tubing of Gas Wells and Flowing Oil Wells Under Pressure," by J. A. Thompson, Otis Eastern Service, Inc., Bradford, Pa.

"Rotary Drilling in the Appalachian Region," by Maurice E. Nicklin, Oil Well Supply Co., Oil City, Pa.

"Progress in Industrial Utilization of Natural Gas," by D. A. Campbell, Eclipse Fuel Engineering Co., Rockford, Ill.

Gas Company Files Appeal Against Childress Reduction

FORT WORTH, Tex.—United Gas Co. has filed a formal appeal to the State Railroad Commission from the city gas rate reduction ordinance at Childress, Tex., but a definite date for the hearing has not yet been set.

The ordinance reducing domestic rates from 75 to 50 cents per 1,000 feet in Childress was passed last week.

Temporary restraining orders have been issued in federal court against enforcement of similar ordinances at Wellington, Memphis and Quanah.

Northwestern Utilities, Ltd., Purchases Gas Reserves

EDMONTON, Alberta.—Northwestern Utilities, Ltd., supplying natural gas to Edmonton, has completed the outright purchase of between 12,000 and 13,000 acres of leases in the Kinsella field east of Edmonton. The acreage was previously held by the company subject to royalty and drilling obligations.

Pacific Coast Consumption Declines in First Quarter

LOS ANGELES, Calif.—Gas consumption in Pacific Coast territory declined 6.9 per cent in the first quarter of this year from the record high level a year ago. Milder weather in California was the principal cause of the drop in sales of 26 coast companies to 56,368,456,000 feet from 60,560,607,000 feet in the first quarter of 1937.

Consumption of industrial and commercial plants remained virtually on a par with last year, while household consumption declined 9.5 per cent.

Gas Purifying Unit Planned For Western Kansas Field

Producers Gas Co. of Hays, Kans., has announced plans for the construction of a complete dehydration and desulfurization plant in the Otis gas field of Rush County, Kans. The plant will employ diethylene glycol as a dehydration agent and monoethanolamine as a desulfurizing medium. The unit is to handle about 70,000,000 feet of gas daily, operating at 600 pounds pressure. Plans call for its completion by July 1.

Natural Gasoline

Naphtha Production Declines In Turner Valley Field

CALGARY, Alberta.—Recent reports indicate a substantial decline in naphtha production from the Turner Valley field. At one time running over 3,000 bbls. a day, the naphtha output, even with three gasoline absorption plans in operation, is estimated between 1,800 and 2,000 bbls. a day.

The naphtha was at first extracted by separators from wet gas, and later this process was supplemented by the erection of gasoline absorption plants. The wet gas wells were in the older section of the field, on the crest of the structure. With continued production and declining pressures, the gas has become steadily drier, and many of the older wells have practically ceased to be naphtha producers.

Refinery Expansion

New Montana Refinery Nearing Completion

SHELBY, Mont.—The new 1,000-bbl. refinery being erected just east of Kalispell, Mont., by the Yale Oil Corp. is nearing completion and is expected to start operation early next week. Equipment is on the ground and connected with final work being done on connecting pipe lines and building the remaining storage tanks of the plant's proposed 20,000 bbls. storage capacity. Construction of the refinery is under the direction of T. R. Corbett, while the plant will be operated under Clayton Burke, formerly manager of the company's Winnet, Mont., refinery.

School for Motor Clinic Heads Opened at Baltimore, Md.

NEW YORK.—A national training school for motor clinic managers was opened at Baltimore on May 16, by the Ethyl Gasoline Corp. Representatives of the corporation from the principal industrial centers will take part in an intensive course of instruction involving the problems of a nationwide clinic program recently inaugurated to develop closer working relationships between the oil and automotive industries. Clinics are now operating in several cities, and others will be established in the near future. By August 1, according to the present plans, 11 clinics will be functioning simultaneously in widely separated areas.

A chief objective of the school is the standardization of clinic procedures. Each clinic is portable and constitutes an indoor proving ground for automobile performance and fuel efficiency. The experience of the past several months in clinic operation in various regions of the country will be analyzed, and the general clinic program reshaped to meet the needs of the diversified personnel of the oil and automotive industries and associated groups. The school was opened with an address by John G. Martin of New York, director of the Ethyl motor clinics. Other speakers included J. Coard Taylor of New York, vice president, and H. W. Kaley, sales manager of the corporation.

Northern Montana Operators Assured Another Refinery

SHELBY, Mont.—Northern Montana operators were assured another refinery with the announcement by J. W. Johnson, of Shelby, that plans had been completed for the erection of a 3,000-bbl. plant by the Producers Refining Co. Definite location for the plant as yet is undecided, but as soon as definite location of the plant is decided upon contracts for the erection of the refinery and necessary building will be let. Work on the plant is expected to be underway within three weeks.

Brandon Refinery Leased By Anglo-Canadian

BRANDON, Manitoba.—Anglo-Canadian Oil Co. of Calgary, Alberta, has taken over the refining plant of Central Refiners, Ltd., on a 30-year lease. A straightrun unit of 750 bbls. daily capacity has been installed, with the plant capable of being stepped up to 2,500 bbls. by installation of a cracking plant. The refinery will operate on production from the Anglo-Canadian crude wells in Turner Valley.

Pipe Line Activity

Standard of Ohio to Lay New Gasoline Pipe Line

Standard Oil Co. (Ohio) plans to lay a gasoline line from its Latonia, Ky., refinery, on the Ohio River, to Cincinnati and probably to Dayton and Springfield, Ohio. The gasoline lines from Cleveland to Akron and Canton, Ohio, and from Toledo to Fostoria, Ohio, built last year, have been put into operation.

Texas-New Mexico Company Vacuum Line in Operation

FORT WORTH, Tex.—Texas-New Mexico Pipe Line Co. began operation of its new 8-inch line into the Vacuum field of north central Lea County, New Mexico. on May 1. This is the first pipe line outlet for the Vacuum pool, and will take all production from the present 25 producers, now averaging 1,475 bbls. daily. Oil moves to the Jal main line booster station, thence through the 12-inch trunk line to the Gulf Coast near Houston.

Louisiana Seeks Power Over Gas Transportation

BATON ROUGE, La.—Senator Sidney W. Sweeney has introduced a bill in the legislature to prohibit transportation of natural gas by pipe lines lacking approval of the Louisiana Public Service Commission. He said gas companies dodge state jurisdiction over their rates by routing Louisiana produced gas across state lines and back into Louisiana for consumption. His proposal follows a suggestion made by the Association of Louisiana Mayors.

Fisher County Pipe Line Co. to Give Rotan Pool an Outlet

FORT WORTH, Tex.—A pipe line outlet is to be provided for the Rotan pool in Fisher County, western Texas. Fisher County Pipe Line Co. has been organized by a group of Abilene men, headed by E. W. Edwards, William Waldrop and Letcher King, for building a lateral line into the Humble Pipe Line Co. trunk system at its nearest point, the Royston field west of Hamlin. Formerly the only outlet for the Rotan field has been by truck or by a 2-inch line running to the small 600-bbl. a day skimming plant in the town of Rotan.

Caddo Crude Oil Resumes Its Purchases From Lisbon Area

Caddo Crude Oil Purchasing Co. has announced that it will resume purchases of crude from the Lisbon field, North Louisiana, at its former total. Takings will total 8,000 bbls. daily compared with 6,000 bbls., the reduced runs of the past several weeks.

Turner Valley Pipe Line Completed This Week

CALGARY, Alberta.—Announcement has been made by S. G. Coultis, manager of the pipe line department of the Royalite Oil Co., that the new 6-inch line from Turner Valley to Calgary will be completed this week. On completion of the line, the company will be able to transport approximately 24,000 bbls. a day instead of 13,000 bbls.

Constructing 4-Inch Line From Sac and Fox Pool

H. F. Wilcox Oil & Gas Co. is laying a 4-inch line from the Sac and Fox pool south of Stroud in Lincoln County southeast of Milfay, Okla., where it connects in section 35-15-7e, in Creek County, to the Tidal pipe line and runs the oil to the Bristow refinery of the Wilcox company.

Saskatchewan Black Gasoline To Be Introduced in June

REGINA, Saskatchewan.—Black gasoline, tax free for farm use, is expected to be introduced in Saskatchewan early in June.

Contracts for Colombian Line From Barco Concession

By L. G. E. BIGNELL

Contracts have been recently signed for 287 miles of 12-inch oil pipe line to extend from the Barco concession of the South American Gulf Oil Corp. in western Venezuela to the seaport of Covenes, Colombia, on the Pacific Ocean. The general contract was let to Lindgren and Swinnerton of San Francisco, Calif., one of the Five Companies, builders of the Boulder Dam in Arizona.

The line will start in the oil fields of the Barco concession in eastern Colombia and runs almost due west to the mountains and then southwest to the coast.

The personnel will be hired in Houston, Tex., and consist of about 200 picked men who will have to undergo a series of treatments to make them immune against sicknesses common to the country through which the line will travel. In addition to the 200 American pipe liners about 800 natives of Colombia will be employed. It is anticipated the work will require about 18 months and after the Americans have been released from the job it will be necessary for them to be under medical observation for another six months to make sure they have not contracted any tropical disease.

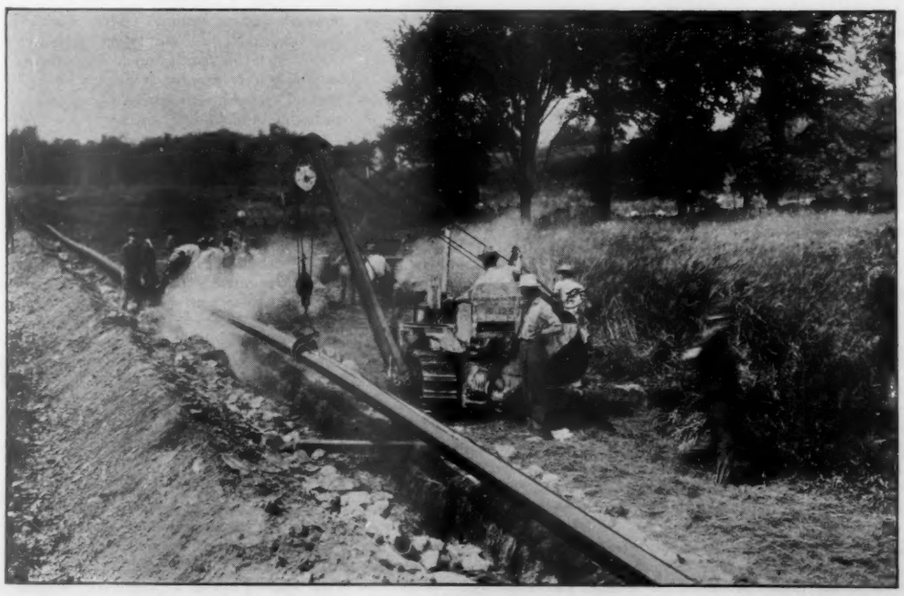
The pipe has been ordered and part shipped. It will be strung along the right of way with specially built tractors and trailers made in Tulsa under the supervision of Pat Lewis of Lewis Brothers, 15 of which have been sent to Baltimore, Md., where they will be shipped with other heavy equipment. Buckeye ditchers will be used and Caterpillar tractors for other general work. The line is to be electric welded and this contract has been let to Brown Welding Co. of San Francisco, Calif.

The material is scheduled for shipment June 10 and work is to start about July 15. It will be necessary to establish camps along the right of way to which supplies will have to be transported. Part of the line will pass through the hostile Indian country along the borders of Venezuela and this stretch must be patrolled day and night.

The line will be laid over the mountains rising to an elevation of about 4,000 feet and descending to the coast level within a distance of about 30 miles. After reaching the summit the oil will flow by gravity about 140 miles from the town of La Gloria to the coast terminal. This route was selected because of this advantage as the oil might have been transferred to barges on the Magdalena River but this method would require at least two days to the coast and the capacity would be limited by the barges available.

Through the swamp country timber will be cut and corduroy roads laid to permit the heavy trucks and tractors to operate. Part of the country is densely covered with a jungle growth.

The South American Gulf Oil Corp. is laying the line but the Barco concession was granted to Socony-Vacuum Oil Co. and Texas Co. All equipment is delivered to La Gloria, Colombia, by river steamer and distributed east and west from that point. This will also be the main headquarters of the contracting companies with C. E. Atwell, vice president of South American Gulf Oil Corp., supervising all details.



"Hot coating" a pipe line before lowering into ditch

Construction Progressing On Shelby County Plant

SHREVEPORT, La.—Portex Oil Co. of Portland, Ore., is progressing rapidly in the construction of its new natural gasoline plant in the Joaquin area, Shelby County, Texas. The plant is located on the Pickering lease, Hanson Survey, and will have a daily capacity of about 15,000 gallons. J. A. Zehntbauer is president of the new company, and D. T. Mason and Carl J. Thomas, vice presidents. Offices of the company are in the Board of Trade Building, Portland.

Annual Convention of I.P.A.A. Called for Tulsa in October

The ninth annual convention of the Independent Petroleum Association of America, to be held in Tulsa, October 19, 20, and 21, will have as its general chairman William G. Skelly, it has been announced by President Charles F. Roeser, of Fort Worth, Tex.

Although previous conventions have brought together an average of more than 1,000 independent operators, the Tulsa meeting should be the largest, according to C. E. Buchner, executive manager. It has been five years since the last national meeting has been held in the headquarters city.

"Thirty local, state, and area independent oil and gas associations are cooperating with the I.P.A.A. in planning for this program-making gathering of the independent oil men of the nation. All organizations will be represented officially and will take part in the continued development of the five-point program of the I.P.A.A.," Mr. Buchner said.

The five points of the program are: Limitation of imports, limitation of withdrawals from storage, correction by congress of inequities in federal tax laws, orderly development of new pools by agreement, and voluntary agreements within the industry. All phases will be covered by reports of standing committees as well as by speakers. In addition, nationally known figures in the industrial and political world are being invited.

Membership of the I.P.A.A. extends into 40 states, including all states that produce any amount of petroleum, and it has been increasing rapidly, association officials said. Mr. Skelly will name the chairmen of a dozen subcommittees to be charged with developing the various features of the convention.

President Roeser has announced appointment of the public relations committee of the association for 1938, with Burdette Blue, president, Indian Territory Illuminating Oil Co., Bartlesville, Okla., as chairman, and F. M. Porter, vice president-secretary, Wirt Franklin Petroleum Corp., Oklahoma City, Okla., as vice chairman, with the following additional members: Rodda A. Clymer, Eldorado, Kans.; John B. Allison, McPherson, Kans.; J. S. Noland, Tulsa; E. L. Smith, Dallas, Tex.; M. W. Blair, Wichita Falls, Tex.; and R. C. Jopling, Bartlesville, Okla.

Chairman Blue called a meeting for Friday, May 20, at Tulsa, during the International Petroleum Exposition.

Pennsylvania Investigation To State Supreme Court

HARRISBURG, Pa.—The State Supreme Court will be asked at its session May 23 to revive the Pennsylvania oil investigation commission, which was ordered disbanded by the Dauphin County court.

The commonwealth appealed from the lower court ruling that the 1937 legislature improperly set up the commission to determine whether the oil and gasoline industry should be placed under state regulation.

The court will be called upon also to determine whether the legislature can appropriate funds through a joint resolution, instead of a "bill."

The Dauphin court held that the commission constituted an illegal delegation of legislative authority, and that such a commission could not be endowed with state funds through a joint resolution. It ruled that an "act" is required.

Louisiana Supreme Court to Hear Tax Suit Appeal

NEW ORLEANS, La.—The Louisiana Supreme Court took under advisement an appeal by the state from a district court decision preventing it from collecting $750,000 allegedly owed by Standard Oil Co. of Louisiana for gasoline taxes.

Principal issues were whether the taxes collected by the company were consumer taxes, as maintained by the state, or excise taxes as contended by the defendant; and whether the 3 per cent allowable margin granted the company is that portion lost by evaporation, fire or otherwise, or whether it is 3 per cent of that portion delivered to retail filling stations.

Counsel representing the state contended the company collected on 100 per cent of its deliveries and paid the state on 97 per cent. He said this allowed 12,000,000 gallons of gasoline to be sold by the company during the past eight years without the state receiving any taxes therefrom.

The state also contended that on 3 per cent of the taxes the company had acted as collector rather than payer, as contended by the defendant in its allegation the tax was an excise tax.

Counsel for the company charged that State Attorney Wilkinson, through an agreement with the state whereby he would receive one-third of any money recovered, had "a personal interest in the case," and cited a ruling said to have been made eight years ago by Secretary of State E. A. Conway holding the tax was an excise levy.

Denying the company had deceived its customers in collecting the tax, the defendant's brief said:

"As a matter of fact, this defendant has not deceived its customers. It has not made a huge tax profit and it has paid the State of Louisiana every dollar due. The special counsel's great concern for the tax-paying public is undoubtedly founded on his personal interest in the amount here sued for."

House Committee Resolution On Submerged Oil Lands

WASHINGTON, D. C., May 17.—The house judiciary committee today voted to report favorably the senate resolution giving the federal government jurisdiction over submerged oil lands, after adopting amendments making it apply to California only. As passed by the senate, submerged lands of all states would be included. As amended by the house committee, the resolution makes California submerged lands a naval petroleum reserve, subject to prior valid claims.

Survey of Alberta Crude For Use by British Fleet

CALGARY, Alberta.—R. Rolleston West, petroleum engineer, technical adviser to the Fuel Commission of British Columbia, has recently completed a survey of the Alberta fields with especial attention to their possibilities as producers of naval fuel for the British Admiralty.

Outside of the Trinidad fields, the present main sources of fuel oil for the Admiralty and for the British merchant marine are in foreign countries, such as Iran, and hence subject to possible restriction in the event of war. Apart from the potential but undeveloped Dead Sea field in the mandated territories of Transjordania and Palestine, the Alberta fields represent the most promising potential crude oil sources in the empire.

So far, the larger part of the production has been light crudes on the west flank of Turner Valley, which are valuable as a source of petrol but do not meet fuel oil requirements so well. For this purpose the 27-gravity medium grade crude of the Talber field is regarded as more suitable, while there are lower grade crudes in the Wainwright and Ribstone areas. The actual production of these grades is, however, at present merely nominal; while there is good reason to believe large scale production of light crude is possible not merely in the Turner Valley but in similar foothill areas stretching from the Atlantic boundary to the Arctic Circle.

Transporting of Alberta crude by pipe line to Pacific Coast ports in British Columbia would be justified only in the event of the development of a very large production for which there is a substantial market. Approximately 500 to 600 miles of line would be required.

The British government is understood to have adopted the policy of building up large scale reserves of imported crudes to meet naval and merchant marine requirements in case of emergency. Efforts to supplement these by the production of petrol and fuel oil from British coals have so far resulted in the erection of plants capable of producing only 5 per cent of the peace time requirements of the United Kingdom; though till recently this work was still in the experimental stage, and it may now be rapidly extended.

Some time ago samples of Turner Valley crude were sent to the United Kingdom for testing, and tentative arrangements for large scale shipments have been made, provided the tests prove satisfactory.

THE MARKETS*

CRUDE OIL: *Reductions in current production which should be fully effective this week has brought a better feeling in regard to the crude situation east of California. Lower allowables have ended pipe line proration by several pipe line companies and ratable takings have been resumed. California situation continues critical with further reductions needed.*

REFINERY: *Refinery gasolines firmer with higher prices anticipated as statistical situation improves. Natural gasolines weak in Mid-Continent and prices lower. No changes in other products.*

TANK-WAGON AND POSTED DEALER: *Local protection to dealers has brought scattered reductions in posted gasoline quotations. Kerosene tank-wagon prices have also been reduced at a few points.*

FINANCIAL: *Oil stocks marking time with small volume. Average for 30 representative stocks week ending May 14: High, 27.89; low, 26.23; close, 26.55. Week ending May 7: High, 27.74; low, 25.83; close, 27.57.*

*Additional information in market section.

Texas Railroad Commission Upheld in Exception Case

AUSTIN, Tex.—The third court of civil appeals has upheld an exception to Rule 37 in the case of Gulf Oil Corp. vs. Fox Wood et al. The company sued to set aside an order of the commission granting an exception to Wood to drill a third well on a tract of 3.65 acres in East Texas, which had been allowed "to prevent confiscation of property." Adjoining on the west was the Harry Hanbury 2.46-acre lease on which a third well had been permitted. The commission held Wood was entitled to offsets to these wells. Gulf protested Hanbury No. 3 and appealed.

Judge McClendon did not think the evidence supported an exception as to waste or confiscation but wrote that his colleagues sustained it under the waste theory advanced in the Century case. He declared the Century case upheld an exception based on a voluntary subdivision and was to prevent confiscation, and that it went no further. He wrote:

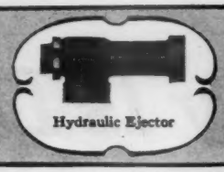
"Rule 37 provides for two exceptions: First, to prevent waste, and, second, to prevent confiscation of property. These two exceptions are separate and distinct. The former is in the interest of conservation generally; the latter is in the interests of the individual owner, and may even cause waste. See Stanolind vs. Commission, 86 H. W. (second) 664. Where the evidence conclusively shows the applicant is entitled as a matter of law to the permit under one exception, the fact that it was granted upon the other exception is not material. . . . But where the evidence does not support the permit upon the express exception upon which it is granted it cannot be supported upon the other exception where the evidence thereon is conflicting.

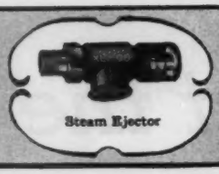
"The commission is an administrative board, and its functions as a fact finding body are quasi-judicial. Under the uniform holding in this state such findings are conclusive, when supported by substantial evidence, and are not reviewable by the courts. But there must be some fact finding, either expressed or implied, by the commission to sustain its orders. And where, as here, the commission expressly based its order upon one exception, 'to prevent confiscation of property,' and the evidence conclusively negatives the existence of that exception, the order cannot be upheld upon conflicting evidence upon the other exception, 'to prevent waste'."

Canadian Oil and Gas Associations Have Agreed Upon Merger

CALGARY, Alberta.—Executives of the Alberta Oil and Gas Association and the Petroleum Producers Association have agreed to merge the two organizations in a new Alberta Petroleum Association. Details of the merger are being worked out by a committee comprising Herbert Greenfield, Walter S. Campbell and William C. Fisher.

PENBERTHY PRODUCTS


Hydraulic Ejector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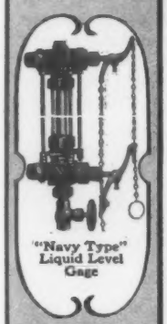
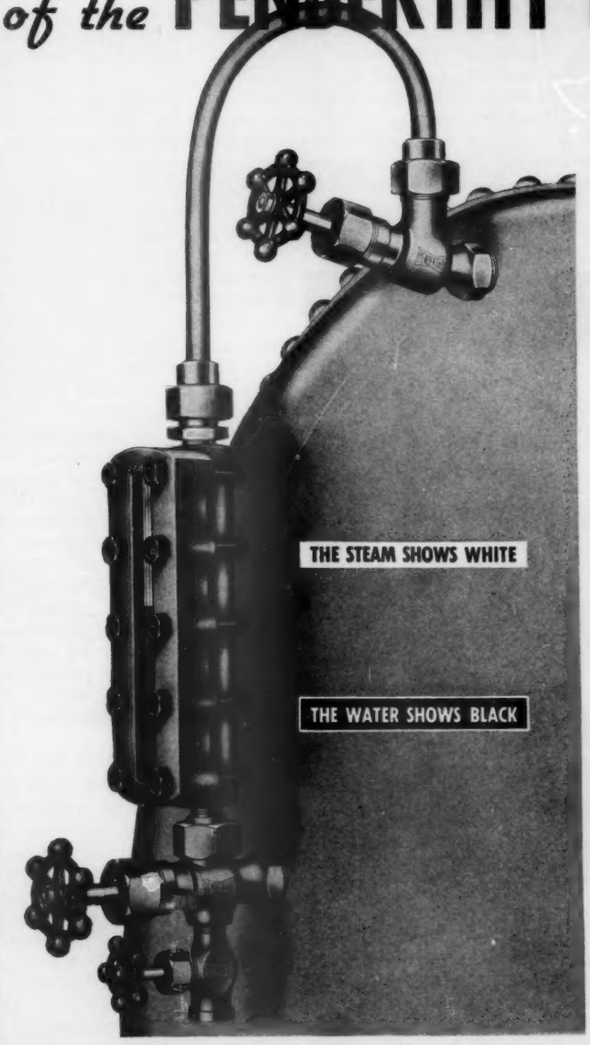
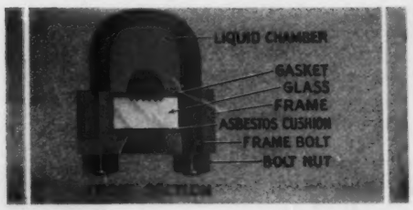
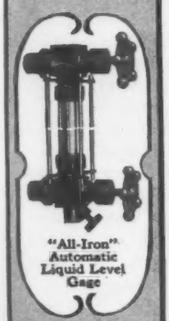

"Navy Type" Liquid Level Gage

Gas Engine Lubricator



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● "It is the most simple gage to service that I have ever seen." This statement is typical of the remarks made throughout the oil fields since the Penberthy Reflex Gage was introduced.

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The Penberthy Reflex Gage shown here is available in both Navy Bronze and Malleable Iron; it is recommended for working pressures to 350 lbs. at 450° F. Gage is furnished complete with Penberthy "Dripless" Drain Cock shown.

Other Penberthy Reflex Gages are made in any length desired for higher pressures and for various kinds of liquids. Any leading oil well supply distributor will be pleased to quote upon your particular requirements.

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What the Oil Industry Is Doing About Conservation

By
H. M. STALCUP*

Approximately 79 years ago, Colonel Drake drilled what is generally regarded as the first oil well in the United States completed at a depth of 69½ feet. Since then more than 350,000 oil wells have been drilled in 22 states of the Union. Not until the advent of the automobile however did the oil industry begin to bulk large in the nation's economy.

For example, whereas the oil production of the United States has approached or exceeded 1,000,000,000 bbls. annually for the past 11 years; the total accumulated production had not reached 1,000,000,000 bbls. at the turn of the present century, and even as late as 1910 such total accumulated production had not reached a figure equal to the output for the year 1937, which is estimated to have totaled 1,277,364,000 bbls.

More strikingly it may be said that of the total accumulated crude oil production from inception to January 1, 1938, which falls a little short of 20,000,000,000 bbls., slightly more than 50 per cent of this tremendous volume has been produced in the past 11 years, or since 1927. If we go back only five more years, or to 1922, we find that the last 16 years have accounted for, roughly, 70 per cent of that total.

Beginning of Problem

While the oil industry had been noted for its fluctuating condition of either feast or famine prior thereto, the year 1923 may be said to mark the beginning of its really serious problem of continuous overproduction, brought about by the simultaneous discovery and development of several very productive oil fields in California and the Mid-Continent area. In that year the total oil produced was in excess of 700,000,000 bbls. for the first time, and double the production in the year 1919, only four years earlier.

Our ability to discover new sources of supply continued unabated, and production in the year 1927 exceeded 900,000,000 bbls, and this overproduction of crude oil—that is, supply in excess of demand—found its way into storage tanks at the rate of 177,100 bbls. daily in that year. While storing the excess supply had been a traditional practice in the industry always, such stocks, now having reached the burdensome peak of 379,660,000 bbls., were rapidly being regarded as an uneconomic millstone around the neck of the industry, and out of this fact, plus the attendant need of a workable plan to safeguard correlative rights of all producers, was born the theory and practice known in the industry today as proration.

The foregoing hurried and brief sketch of the early-day history of the oil producing branch of the industry has been given as a predicate to this assertion; that about 99.44 per cent of what has been accomplished along conservation lines has been done in the last decade. This is a decidedly startling and bold statement, interesting if true, but it is believed to be susceptible of proof.

By and large, oil producers long noted as being outstanding examples of rugged individualism more or less grumblingly accepted the new-fangled idea of production control or proration, somewhat as a drowning man clutches at the first passing straw. The simile is undoubtedly a good once since the oil producer was slowly—and not too slowly—drowning himself in an ocean of unwanted, unneeded oil. But, if he so much as relaxed his supposedly commendable efforts to produce his oil before his offset neighbor got it, the net result was vice versa. And so proration was born; a plan designed; (a) to limit total production to consumptive demand, thus eliminating the uneconomic and wasteful necessity of above-ground storage; (b) to limit the individual lease or well to its proper and equitable share in the overall production from the pool, and; (c) to obtain a greater ultimate recovery of oil through proper use of reservoir energy, both gas and water drive, and allow oil production to be taken from the various leases in a pool at such comparative rates, that underground energy would be fully utilized and waste prevented.

H. M. STALCUP

Most first ventures in proration were simply voluntary agreements among producers in a given field, but as drilling continued deeper and more efficient, what was at first regarded as a purely temporary condition began to take on the aspects of a continuing and permanent phase of the industry. And so with the attendant need of wider and more rigid plans of proration, and particularly in view of the presence of a relatively small percentage of conscientious objectors to always complicate if not make completely unworkable such voluntary proration, the regulatory bodies, having jurisdiction over oil and gas conservation matters in the several more important oil-producing states, assumed control and placed in effect proration, which through the years has gradually evolved into the method and procedure as we know it today. The device is still far from perfection but substantial and continuing progress is being made by the industry, by the state regulatory bodies and by the Interstate Oil Compact Commission, particularly along the conservation or waste-prevention phase of the problem.

This gets us back to the earlier statement that about all that has been learned and done along conservation lines in the industry has been learned and done in the past decade, or since the industry had proration forced upon it as a life-saving expedient.

While it is admittedly a sad commentary on our much vaunted Yankee efficiency and ingenuity, it is believed that the record bears out the assertion that real progress in an appreciation of the fact that the efficient production of oil and gas was a science and not, as the same record indicates it to have previously been, a rule-of-thumb, catch-as-catch-can, and devil-take-the-hindmost game, definitely dates from about the same time, as the advent of proration; if, indeed, it did not grow directly out of the experiences rapidly gained and observations made in a surprisingly short time under that system of controlled production from oil wells. In other words, we have made more progress in the development of the art and science of developing and operating oil wells and pools in the interest of efficient production of the greatest possible recovery of oil therefrom, in the last decade than in the preceding 70 years.

Examining the Record

Let us examine the record and see if such an astounding statement seems reasonably justified. Generally speaking, all authorities, geological and engineering, the Bureau of Mines and United States Geological Survey, are in agreement that the average percentage of oil produced of the theoretical recoverable quantity in various fields throughout the country, developed and largely depleted up to, say, 10 years ago, was on the order of from 15 to 25 per cent. Contrariwise, from 75 to 85 per cent of such oil was left largely unrecoverable by methods known today. Here we had waste, and waste with a vengeance! A typical case of "saving at the spigot and wasting at the bunghole." Such wasteful methods or results would be bad enough in any case, but when the waste is that of such a vitally important irreplaceable natural resource as oil and gas, it becomes unthinkable.

Happily, the percentages of recovered to unrecovered oil in many recently drilled pools are in the way of being reversed. Thanks to proration, coupled with a rapidly growing appreciation of the value of conserving natural formational pressure as an all-important aid in the recovery of the highest possible percentage of oil, definite and very substantial progress has been made.

Whereas under former practice of wide-open uncontrolled production from the individual well,

*Vice president in charge of production, Skelly Oil Co. Address, annual meeting, Natural Gas Department, American Gas Association, New Orleans, May 9-12.

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The LANDMACO employs the sturdy heat-treated and ground LANCO Head and the LANDIS Long-Life Tangential Chaser. The LANCO Head assures an unusually high degree of accuracy to your threads and the long life of the LANDIS Chaser guarantees low operating cost.

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Colcord-Wright Machinery & Supply Co., St. Louis, Mo.; D. S. Mair Machinery Corp., Houston and Dallas, Tex.; Woodward, Wight & Co., New Orleans, La.; Herberts Machinery Co., Ltd., Los Angeles; Herberts Moore Machinery Co., San Francisco, Calif.; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.

which admittedly resulted in a quick return of invested capital, but at the now unthinkable cost of leaving the major portion of the oil unrecoverable on account of the inevitable early exhaustion of the formational energy which is the sole motivating force to propel oil through the reservoir rocks to the well bore; present-day production methods contemplate the slower, more orderly and more uniform withdrawal of oil in such a manner as to conserve and put to useful purpose such invaluable energy to the greatest degree possible, thereby not only greatly reducing the cost of lifting oil to the surface by prolonging the period of natural flow, but, what is even more important, undoubtedly greatly increasing the percentage of ultimate recovery of oil from the reservoir rocks.

This natural energy inherent in an oil or gas formation is derived from, (a) gas under pressure; (b) an hydrostatic head of water, or; (c) a combination of the two forces. All of our oil fields fall in one of the three classifications.

Maintenance and proper utilization of natural formational energy may conservatively be said to be of the very essence of efficiently recovering the greatest possible percentage of recoverable oil in any reservoir.

It follows as a natural corollary then, that any method in the completion of an oil well or in its subsequent operation that tends to conserve and maintain this all-important oil producing energy is true, sound and constructive conservation.

Let us now look at the picture in retrospect and see what other factors influenced and affected the advancement made in the last decade.

Important Factors

One vitally important factor springs from the circumstances that the profession of petroleum engineering came into being, by pure coincidence, at about the same time that control of production, or proration, was forced upon the industry. Undoubtedly, a lion's share of the credit for the recent advancement conservation-wise in the industry is rightly creditable to the efforts of these engineers and to the constructive work of those in that profession that has exerted such a vital influence in transforming the oil "game" into a scientifically operated and conservation-minded industry.

Out of the circumstance of controlled production, aided and abetted by petroleum engineers, in the past 10 years has come an almost endless chain of improvement in operating practices and mechanical perfection that, considered in the light of then and now, seems almost incredible and, it is thought, conclusively confirms the rather strong previous statement that more progress has been made in the past 10 years than in the balance of the life of the industry.

Let us examine the record. Who among you, 10 years ago, had ever so much as heard of the expressions; back-pressure, bottom-hole pressure, completion of wells through a one-eighth inch choke, producing one through a 1/64-inch choke, gas-oil ratio, fluid level, pressure maintenance, reservoir energy, controlled water drive, maintenance of uniform bottom-hole pressures, reservoir equilibrium; and so on and on with an almost endless list of terms now bandied about as though we had used them always, not just for the purpose of displaying the improvement in our vocabulary, but each and every one representing a vital step in the scientific progress in improving the technique of producing a higher percentage of the recoverable oil in a given pool, and at a lesser cost.

Similarly, in the mechanics of the job, 10 years ago who of you had ever heard of straight hole drilling? We simply drilled a hole in the ground, letting nature take its course, whereas today, a deviation from the vertical in excess of 3 degrees is taboo. On the other hand, who among us ever so much as dreamed a decade ago of intentionally controlled directional drilling? Today, a well may, at will, be drilled with uncanny accuracy in any desired direction, so that the bottom of its hole may be at a predetermined point many hundreds of feet laterally from the derrick floor.

Ten years ago we knew less than nothing of the importance of keeping the mud-laden fluid with which rotary drilling is done to any particular standard; whereas, today it is regarded as of the very essence of properly drilling and completing an oil well efficiently; and a roughneck member of a rotary drilling crew watches the weight and viscosity of his mud with the same intense interest as does a fond young mother the daily diet of her babe in arms.

How common 10 years ago was the wire-line core barrel, an improvement in the art of cutting and bringing to the surface samples of the formation drilled through without which doubtless many valuable oil reservoirs would have remained undiscovered?

Who, much less than 10 years ago, ever heard of an electrical logging device, handily run in a rotary drilled hole, still full of mud-laden fluid, to give the operator a picture of the permeability, porosity and possible oil, gas or water content of sands, dolomite or lime formations drilled through?

Or, who had heard of the practice of deliberately drilling through and casing and cementing off an oil sand, and then perforating such casing at a predetermined depth opposite such sand, with an electrically operated gun that shoots holes through the pipe at desired depths? This last mentioned method and development, now in use about five years, is a truly remarkable aid in conservation, since it makes possible the completion of oil wells with low gas-oil ratios, in certain areas and under certain formational conditions, well-nigh impossible of such completion under the older and conventional methods.

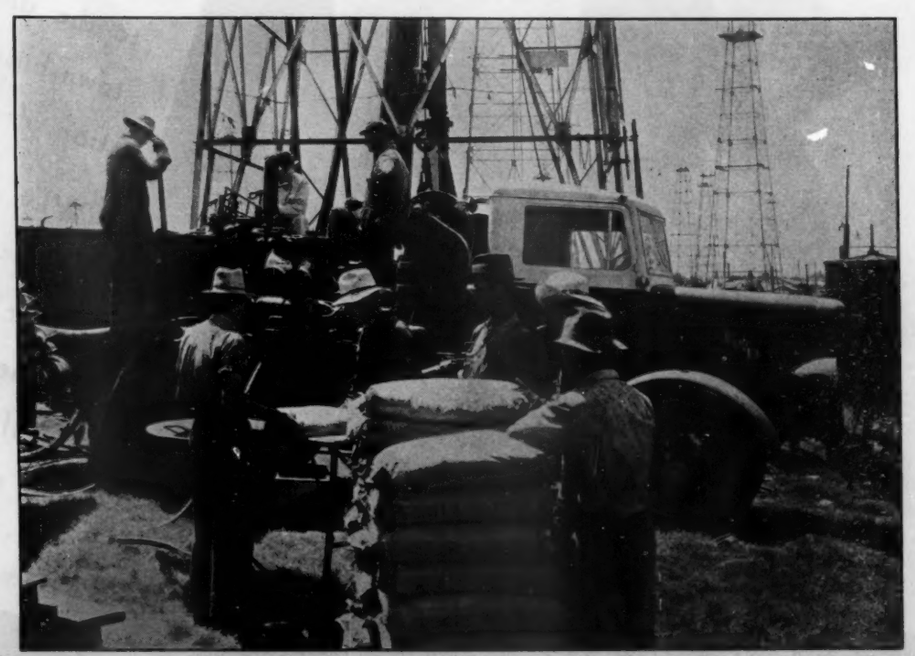
And, who had heard of the now common practice of treating with hydrochloric acid, lime formations to increase the natural porosity and permeability, and thereby the oil and gas recovery? Truly remarkable results have been obtained by this method in very recent years, first: in reviving the productive ability of old and therefore largely depleted lime wells, and second: by greatly increasing—often several hundred per cent—the natural flow of newly completed lime wells? Instances are of record where literally dry holes have been converted into profitable oil wells by this method, and countless noncommercial wells have been changed into profitable ones by such acid treatments. This would seem to be an instance of conservation with a capital "C."

Without the restraining influence of some desire for brevity and a disinclination to become too boresome, one could easily go on and on itemizing in an almost endless list, countless mechanical perfections made in recent years, all of which, like the few examples here mentioned, have and are having their favorable influence directly or indirectly upon the problem of conservation, now so uppermost in the minds of all constructive elements in the industry.

The growing appreciation of the vital importance of the all-important energy inherent in an oil and gas producing formation, has given impetus to any and all methods and operating practices designed to conserve such energy and make certain that it performs its invaluable function to the greatest degree possible before exhaustion. Sketchily, these methods principally take the form of, (a) making certain of proper well completion in the first instance so as to conserve such energy, by completing same with a naturally low gas-oil ratio; (b) so equipping and operating the well as that a barrel of oil will be brought to the surface with the least possible diminution of natural energy, so that; (c) the original formational pressure will be maintained to not only the highest degree, but that; (d) such pressure decline as is inevitable shall be uniform throughout the reservoir, thereby preventing wasteful and excessive loss of gas energy through channeling of free gas and the loss of gas in solution in oil adjacent to abnormally low pressure areas otherwise developed in the pool, thus; (e) preventing the premature and uneven encroachment and channeling of water, so disastrous to the ultimate recovery of the highest possible percentage of oil, all of which necessitates; (f) the orderly, uniform withdrawal of oil at a relatively slow rate from the pool, or common reservoir, which brings us back to the original statement that our progress in the industry, conservation-wise, springs and dates from the time when controlled production, or proration, was forced upon, or adopted by the industry, as you will.

Concurrent with an increasing knowledge of the all-important part that reservoir energy plays in the art of efficiently producing oil, there has

(Continued on Page 156)



Typical set-up for squeeze job in an East Texas well

Rx
Tired? Fagged Out?
..... you need
Play, not Pills!
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How long has it been since you had a real vacation? Is a trip to the oil show or any out-of-town business jaunt your conception of a vacation?
Why can't all of us really go places and do things this Summer? If a vacation is good for the other fellow it's good for us. If gasoline is a tonic, let's take more of our own medicine!
FRICK-REID SUPPLY CORPORATION

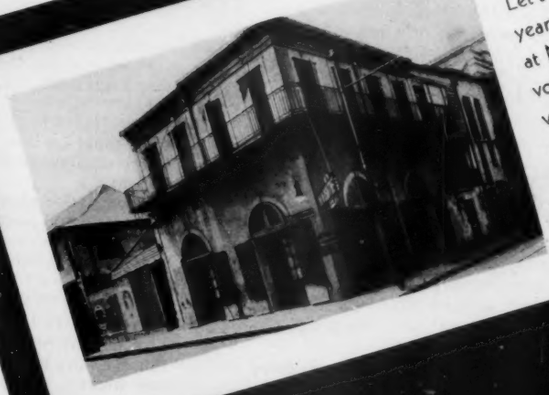
Let's stand on New England shores this Summer and watch the fishing fleets come in!

AMERICA THIS SUMMER

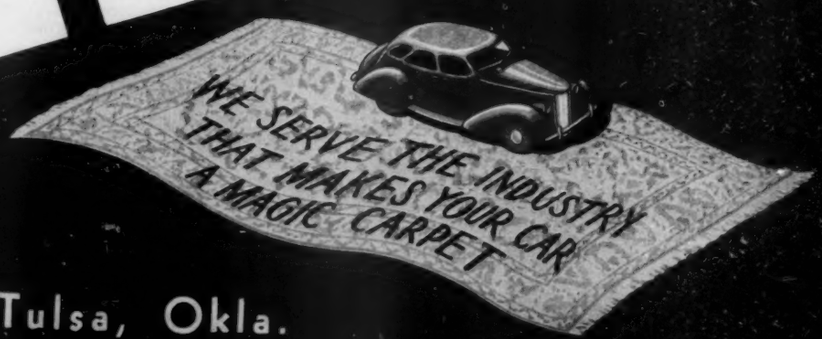
Let's stroll under the fine old trees at Independence Hall in Philadelphia and thrill to the patriotism of our American forebears and their conception of a government of the people, for the people and by the people.

Let's enjoy the majesty of those California redwoods that were old when Christ was born.

Let's see beautiful Lake Mead in the Boulder Dam Recreation Area and tramp foot paths into newly accessible scenes in the Grand Canyon of the Colorado where few white men have ever explored.



Let's explore the 200-year-old Absinthe House at New Orleans, rendezvous of Lafitte the Pirate, with its "entre sol" where stolen goods were hidden during the Spanish Regime.



Pittsburgh, Pa. . . . . Tulsa, Okla.

Will Spend $30,000,000 For California Plants

By L. P. STOCKMAN

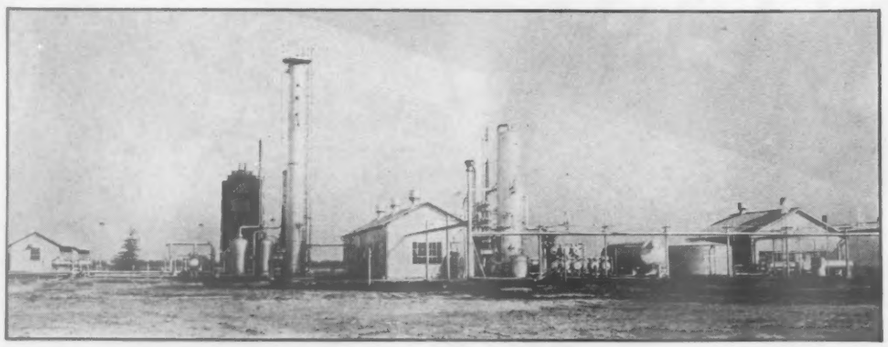
LOS ANGELES, Calif., May 16.—California refiners, due to the demand for improved petroleum products and to increase operating efficiency, are spending $29,210,000 for modernization of existing facilities and installation of new equipment, and natural gasoline plant operators are spending $1,045,000 for new construction and expansion of operating units.

In addition to this large sum, Southern California Gas Co. and Southern Counties Gas Co. have allocated $5,000,000 to provide additions and betterments to their respective natural gas distributing systems and to take care of normal increases during 1938.

Richfield Oil Corp. tops the list of refinery construction with a budget of $5,000,000, followed by Union Oil Co. and Tide Water Associated Oil Co. with expenditures of $2,000,000 each. Two of the units, Union Oil Co.'s crude distillation unit and cracking plant at Oleum refinery and Standard Oil Co.'s hydrogenation plant at Richmond refinery have recently been completed and are at present in operation.

Tide Water Associated Oil Co.'s Alco cracking units and polymerization plant and additional distillation units for heavy crude oil at Avon refinery, General Petroleum Corp.'s new equipment at Torrance refinery and Shell Oil Co.'s new furfural extraction plant at Martinez refinery should be finished within 30 days. Construction work on Richfield Oil Corp.'s Watson refinery which is being modernized and additional equipment installed and erection of a 4,000-bbl. reforming unit with auxiliary facilities at Wilshire's Norwalk refinery will require the better part of another six months before final work is completed.

In the San Francisco Bay region, Pacific Gas & Electric Co. has made arrangements with Union Oil Co., Tide Water Associated Oil Co. and Shell Oil Co. to erect 44,000-kilowatt steam generating plants at the Oleum, Avon and Martinez refineries and construction work is already under way. These units will be completed late this year. Standard Oil Co. already has a somewhat similar plant which it erected for its own account and it is probable the other three refiners in the San Francisco Bay region would have made similar installations if a mutually satisfactory agreement had not been made between them individually and Pacific Gas & Electric Co. At any rate these new plants involve the expenditure of $5,000,000 each. These installations will greatly increase refinery efficiency and since Pacific Gas & Electric Co. is standing the construction cost the agreements should prove mutually advantageous.



Natural gasoline plant of Shell Oil Co. in Ten Section field

The $5,000,000 allocated by Southern California Gas Co. and Southern Counties Gas Co. will be used chiefly for expansion work between now and the end of the year. The extensive program of pressure reinforcement carried through last winter to insure a wider margin of safety during peak periods such as occurred in the winter of

1938 Refinery Construction in California

Company—	Location	Type of work	Cost	Status
Richfield Oil Corp.	Watson	Combination topping heaters, additional cracking units, polymerization plant, single flash rerun unit, hydrogen sulfide removal plant, revamping existing crude distillation units	$5,000,000	Building
Tide Water Associated Oil Co.	Avon	Cracking units, additional distillation units for heavy oil	2,000,000	95 per cent completed
Union Oil Co.	Oleum	15,000-bbl. crude distillation unit; 12,000-bbl. cracking plant for heavy crude and fuel oil	2,000,000	Just completed
General Petroleum Corp.	Torrance	Crude distillation unit, additional cracking equipment	850,000	Building
Standard Oil Co.	Richmond	Hydrogenation plant	750,000	Completed
	Richmond	Lubricating oil plant	500,000	Building
	El Segundo	Additional cracking units, modernization	*500,000	Projected
Wilshire Oil Co.	Norwalk	4,000-bbl. reforming unit, new crude furnace, revamp cooling tower	500,000	Contract awarded
Gilmore Oil Co.	Cat Canyon	Modernizing road oil plant	35,000	Building
Shell Oil Co.	Martinez-Dominguez	Furfural extraction plant, modernizing lubricating crude topping unit	750,000	80 per cent completed
	Los Angeles	Enlarge bulk loading plant	400,000	Completed
Petrol Corp.	Long Beach	New plant	*500,000	Projected
Mohawk Petroleum Co.	Bakersfield	New bubble tower, new boiler house facilities, modernization	250,000	90 per cent completed
Edco Refining Co.	Santa Maria	New 2,500-bbl. refinery	100,000	Building
R-C Refining Co.	Santa Maria	New 1,000-bbl. refinery	75,000	Projected
Tide Water Associated Oil Co. and Pac. Gas. Electric Co.	Avon	44,000-kilowatt steam generating plant	5,000,000	Building
Shell Oil Co. and Pac. Gas. Electric Co.	Martinez	44,000-kilowatt steam generating plant	5,000,000	Building
Union Oil Co. and Pac. Gas. Electric Co.	Oleum	44,000-kilowatt steam generating plant	5,000,000	Building
		Total expenditures	$29,210,000	

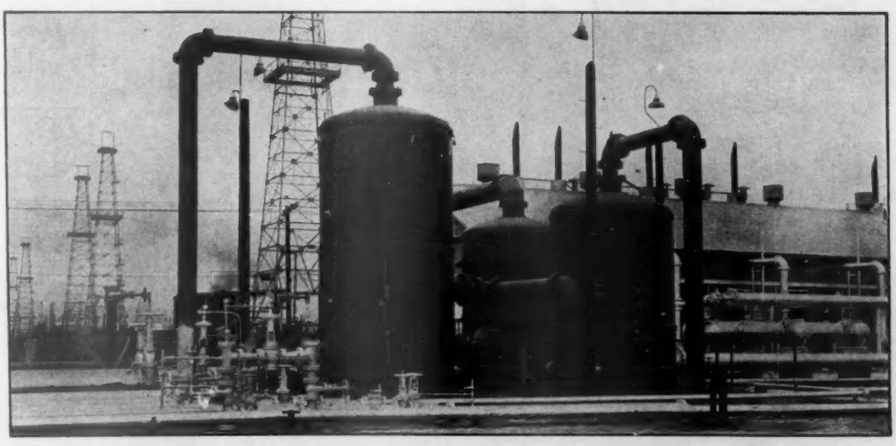
*Estimated.

Shell Oil Co. photo

Part of Shell Oil Co. Martinez refinery on San Francisco Bay

1936 has already been virtually completed. However, Southern California Gas Co. has included several pressure reinforcement jobs in the new budget and Southern Counties Gas Co. will complete erection of a series of high pressure holders, some of which were started in 1937. These holders, seven in all, four being in Pomona and three in Santa Barbara, will serve to reinforce and equalize pressure conditions and provide an emergency supply in case of interruptions to service.

Anticipated developments for 1938 over Southern California Gas Co. system are expected to require the construction of additional dehydration and cooling equipment for natural gas supply. It is expected that from 12 to 20 miles of 10-inch, 12-inch and 16-inch pipe will be needed for production and transmission mains and in the event of development of additional sources of natural gas supply further production and transmission facilities may be required.



Portion of General Petroleum Corp. natural gasoline plant at Wilmington, California

Richfield's Refinery

Richfield Oil Co. during the receivership which existed for several years was unable to make necessary additions to either its Watson refinery or Hynes refinery and as a consequence Richfield Oil Corp. was faced with a major construction program upon conclusion of the rehabilitation and merger with Rio Grande Oil Co. The $5,000,000 budgeted for modernization of the Watson refinery and construction of additional equipment has been worked out carefully and should cover all contingencies.

The Watson refinery erected by the late E. L. Doheny for Pan American Petroleum Co. was the most modern of its type in California at the time and a large part of the original equipment and all storage facilities will be utilized by Richfield Oil Corp. Briefly, the latter company is constructing new cracking equipment, a polymerization plant, a topping heater, single flash rerun unit, hydrogen sulfide removal plant and other necessary facilities as well as revamping existing crude distillation units. Two horizontal topping heaters and six vertical cracking heaters and one of the largest heating furnaces on the Pacific Coast are in course of construction at present. Superstructures of the vertical cracking units will be approximately 132 feet above the ground surface.

The six vertical de Florez cracking heaters will be grouped into two units of three each and will be augmented by one double-fired Alcorn horizontal heater to each unit. The vertical de Florez cracking units will be of molybdenum alloy steel and will be 65 feet high and 30 feet in diameter. The new polymerization plant, using the catalytic process developed by Universal Oil Products Co., will have an estimated capacity of 6,000,000 feet of gas per day and be of conventional design. The hydrogen sulfide removal plant which will make use of tri-potassium phosphate solution for removal of the hydrogen sulfide before the gas is charged to the polymerization plant is being constructed under a license secured from Shell Development Co. The 8,000-bbl. per day single flash rerun unit is being constructed by Bechtel-McCone Corp. at a cost approximating $150,000.

Upon completion during the latter part of 1938 Richfield Oil Corp.'s Watson refinery will have a cracking capacity estimated to be effective in connection with a refinery throughput of 60,000 bbls. of crude oil per day and produce a larger volume of the more highly valued products of crude oil at a lower cost than was possible with the old equipment. The Vinvale refinery of Richfield has a crude charging capacity of 10,000 bbls. daily with modern cracking facilities estimated to be effective in connection with a refinery throughput of 6,000 bbls. of crude oil daily. The company's Hynes refinery has a crude oil charging capacity of approximately 50,000 bbls. daily but is not any too efficient in operation and for this reason the bulk of Richfield's processing will be done at the Watson and Vinvale refineries.

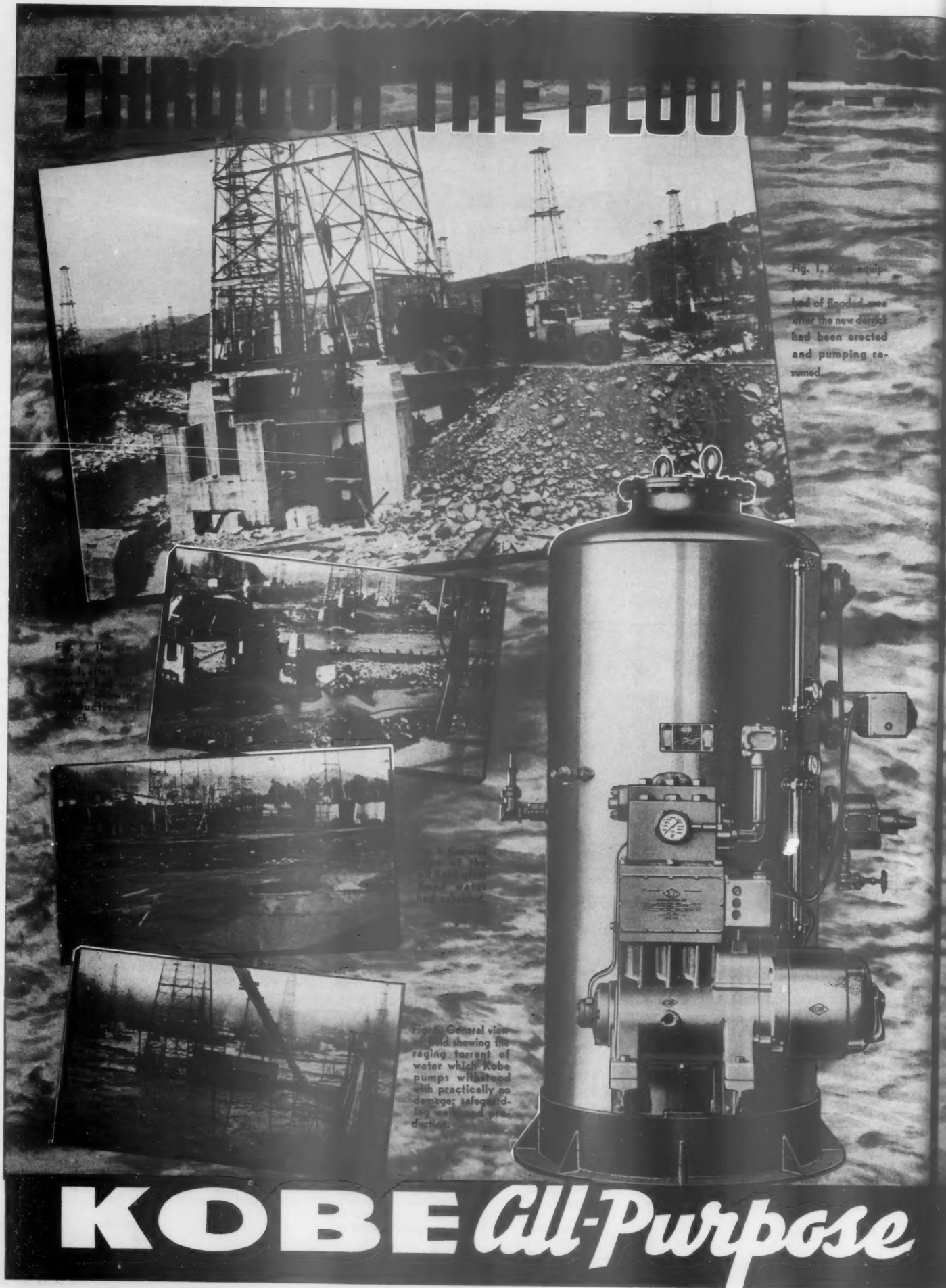
Wilshire Refinery

Wilshire Oil Co., which last year completed a polymerization plant at its Norwalk refinery which was finished in 1936, has awarded a contract to Fluor Corp., Ltd., for erection of a reforming unit and additional necessary equipment that will have a daily capacity of 4,000 bbls. The new unit which will cost about $500,000 has been designed and will be licensed by Universal Oil Products Co. The re-

(Continued on Page 60)

1938 Natural Gasoline Plant Construction in California

Company—	Location	Type of work and daily capacity	Cost	Status
Union Oil Co. and Superior Oil Co. (jointly)	Rio Bravo	Absorption, 60,000,000 feet	$500,000	Building
Richfield Oil Corp.	Wilmington	Compressor plant	60,000	Building
Wilmington Gasoline Co.	Wilmington	Absorption, 20,000,000 feet	150,000	Building
Inglewood Gasoline Co.	Wilmington	Absorption, 7,000,000 feet	135,000	Projected
Lomita Gasoline Co.	Wilmington	Additional compressor units to move gas to adsorption unit at Long Beach	50,000	Building
St. Helens Petroleum Co.	Montebello	Absorption, 25,000,000 feet	150,000	Bids asked
		Total expenditures	$1,045,000	


THROUGH THE FLOOD
KOBE All-Purpose

PRODUCTION UNINTERRUPTED

Fig. 2. Showing well head (in circle) of well equipped with a Kobe pump that continued pumping during the entire storm except for a short interruption in electric power service.

KOBE

That Kobe is the safest and best method of producing oil wells in localities where high water or other hazards might endanger production and equipment, was forcefully evidenced in a field which suffered serious damage during the recent storm and flood which swept through Southern California.

Wells in this area are located in and tributary to the river bed. The large volume of water that engulfed the field, and its terrific force, are clearly shown by the illustrations reproduced here.

Figure 2 shows a well produced with a Kobe pump which continued to pump oil during the entire storm except for a short interruption of the electric power service, although tubing was badly bent and forced out of position.

Figure 3 shows a well that had been undermined and the rig destroyed, after the flood had subsided. Figure 1 is the same well after a new derrick had been erected. The Kobe pump producing this well withstood this terrific onslaught of water, silt and debris without damage; safeguarding the well and production. Tubing at the well head was badly bent, but it held securely. When straightened and one nipple replaced, the power was turned on and the pump operated perfectly. Production was resumed, and no pulling job was required.

For hazardous localities of this character, the Kobe surface unit can be located at any point outside the danger zone. No equipment that usually is endangered by flood conditions is installed at the well. The result is ultimate safety for the well, production and equipment, and the elimination of costly foundations required by conventional pumping equipment.

KOBE, INCORPORATED
(Pronounced KŌB)
3040 East Slauson Avenue, Huntington Park, California
Branch Office: 3119 South Robinson Avenue, Oklahoma City, Oklahoma

Fig. 6. The tremendous force of the flood and the large deposits of silt left in its wake are clearly shown.

Fig. 7. The river of raging waters that left only destruction in its wake.

HYDRAULIC PUMP

forming unit which will be a once-through process using an up-shot furnace will operate on a heavy straightrun naphtha that will have a boiling range between 300 degrees and 475 degrees and produce a top grade gasoline. In addition to the new reforming unit, Wilshire Oil Co. will erect a new crude oil heater in order to increase the crude oil capacity of the refinery and the existing cooling tower, one of the largest on the Pacific Coast, will be partitioned off and a section utilized for the new equipment. The new facilities being installed, together with changes in design, will increase operating efficiency as the existing crude stills and Dubbs cracking units operate as a continuous process. The Dubbs units combine topping and cracking operations, the heat for topping operations being derived through heat exchangers from the hot oil leaving the fractionator. The new crude oil heater will provide an independent source of heat and can be operated with the reforming unit as a separate unit.

Standard Refinery

Standard Oil Co. completed a new hydrogenation plant at its Richmond refinery early in 1938, the first such plant to be erected on the Pacific Coast. Polymers produced from a plant completed at Richmond refinery in 1937 are being charged to the hydrogenation unit and through addition of hydrogen a base stock is produced which forms the base for a gasoline having an octane rating of 100 plus. Standard's hydrogenation plant is licensed by Hydro Patents Co. and is designed to operate at a pressure of 3,500 pounds and has a capacity of approximately 1,000 bbls. per day of charging stock.

This hydrogenation plant in addition to being the first erected on the Pacific Coast is the fourth to be completed in the United States, the others being at the Baton Rouge refinery of Standard Oil Co. of Louisiana; Port Arthur, Tex., refinery of Gulf Oil Co. and at the Bayonne, N. J., refinery of Standard Oil Co. of New Jersey. Standard Oil Co.'s new lubricating oil plant is under construction at Richmond refinery and while no definite plans have been made additional improvements and additions are expected to be made at the El Segundo refinery in Los Angeles Basin before the close of 1938.

Tide Water Associated Refinery

Tide Water Associated Oil Co. and Union Oil Co. both have made changes in crude distillation units and constructed additional cracking equipment to take care of heavy crude oil and fuel oil. The latter's addition included a 15,000-bbl. per day crude distillation unit and a 12,000-bbl. daily cracking plant. At Avon refinery, Tide Water Associated Oil Co. revamped existing stills and constructed some Alco cracking units which incorporate the latest developments in petroleum refining and include a modern three-coil cracking plant for optimum production of both volatile antiknock gasoline and high grade fuel oil. This new plant is unique in that provision has been made to break up a daily charging stock of 14,500 bbls. of oil into several fractions so that the bulk of fuel oil produced is produced under conditions known to yield a product of excellent stability and heating value while the cracked gasoline is largely manufactured under special cracking conditions favorable to a large yield of motor fuel of unusually high octane rating. Late in 1937, Tide Water Associated Oil Co. awarded a contract to Alco Products, Inc., for construction of a new polymerization plant and the entire new plant including the additional cracking units is rapidly nearing completion. One of the features of the polymerization plant is the proposed manufacture of a new premium grade gasoline with exceptional volatility and performance characteristics from the 5,000,000 feet of refinery gas to be treated daily.

Wilmington Natural Gasoline Plant

The Fluor Corp., Ltd., is putting the finishing touches on a new natural gasoline plant for Wilmington Gasoline Co. on Terminal Island in the Wilmington field of Los Angeles and present plans contemplate operation within another two weeks. Wilmington Gasoline Co. is headed by William C. McDuffie, former receiver in equity of Richfield Oil Co., and several of his associates. The plant was purchased a few months ago from the Gilmore-Dabney interests at Long Beach but since it was shut down for several months before being taken over a considerable amount of reconditioning and replacement of material has been necessary. The plant when finished will have seven 165-hp. Clark direct-driven gas engine compressors which will be used to boost the wet gas from the field to absorber pressure. Five of these units have been equipped with new 17-inch power cylinders to increase the horsepower to 250 and the remaining two have been provided with top exhausts by turning over the present 16-inch cylinders.

Jacket water cooling is provided in a closed system using atmospheric cooling sections located in the cooling tower. The absorption and distillation unit consists of two 84-inch absorbers, one 48-inch reabsorber, one oil-to-oil heat exchanger unit consisting of six parallel banks, one oil preheater, one 66-inch fractionating still, one gasoline condenser and one oil cooler, each of the latter two consisting of atmospheric sections located in the cooling tower. The cooling system consists of one model 18-ZA-15 Fluor atmospheric cooling tower which is 23 feet 7 inches wide at the base by 114 feet 2 inches long by 52 feet 9 inches high. All cooling is done in atmospheric sections located in the base of the tower. Water circulation is provided by Ingersoll-Rand engine-driven centrifugal pumps.

The stabilizing unit consists of one 24-inch column, exchangers, reboiler and reflux condenser, the latter being of the shell and tube type located above the column which provides a gravity return of the reflux to the column. Separate water circulating pumps are provided for furnishing water to the reflux condenser. Steam is generated in five 100-hp. horizontal return tubular boilers, which operate at 150 pounds per inch gauge. Gasoline storage is provided by four 25,000-gallon vertical pressure tanks, three being normally used for finished gasoline and the remaining tank for raw gasoline surge. Due to the nature of the soil it was found necessary to install piling under the heavier pieces of equipment. Absorber capacity is 20,000,000 feet per day at 40 pounds, oil circulation 500 gallons per minute and approximate production of finished gasoline 30,000 gallons.

All pipe in the plant is located in pipeways above ground to facilitate maintenance. In addition, the plant is also equipped with laboratory, oil pump house for distillation and stabilizing unit, water pump house for tower circulation and jacket water circulating pumps, compressor intake scrubber, compressor after cooler scrubber, absorber outlet scrubber, reabsorber outlet scrubber, absorption oil storage tank and slops tank, loading rack for trucks and jacket water surge tank. The Wilmington Gasoline Co. made contracts a few months ago to process all natural gas produced on property of Southern California Edison Co. which is being exploited by Union Pacific Railroad Co.

Other Wilmington Gasoline Plants

In addition to Wilmington Gasoline Co.'s new natural gasoline plant nearing completion, General Petroleum Corp. has a plant with a normal capacity of 40,000,000 feet per day and Lomita Gasoline Co. has a compressor plant in the east end of the Wilmington field which boosts gas purchases over to its absorption plant on Signal Hill. Lomita Gasoline Co. is at present installing four new compressors at the Wilmington booster station and has made deals with Standard Gasoline Co. and Signal Oil & Gas Co. to handle excess gas at Long Beach.

General Petroleum Corp.'s plant at Wilmington has been enlarged several times and has a number of unique innovations, including a system of automatic control, emergency shutdown equipment located outside the plant, a direct-fired heating system and the use of sea water drawn from ocean for all cooling purposes. This plant was completed last year and has proven highly efficient. The plant is designed for almost complete automatic control of all processes, furnace temperature and other temperatures and pressures are regulated from the central control board. An alarm and signal system is operated by the use of pressure and float switches located at various points throughout the water-cooling system, the absorption oil circulatory system and on gas and gasoline systems.

Use of sea water for cooling purposes makes it possible to maintain more uniform year-around operating temperatures than would be possible with atmospheric cooling. The proximity of Los Angeles inner harbor makes this practice economically possible. Sea water is taken into the system from Cerritos Channel and discharged into Ship Channel 2 in order to avoid any possibility of heating the source of supply. The only treatment given to the salt water is the addition of two parts per million of chlorine to prevent marine growth in piping and coolers. Pipe lines throughout the plant and in most other instances in the Wilmington field are laid on top of the ground due to the extremely corrosive nature of the soil.

Projected Plant

Inglewood Gasoline Co. has recently completed a comprehensive study of gas volumes and natural gasoline content together with other important technical data preparatory to determining the advisability of erecting a new natural gasoline plant in the Wilmington field, but no definite decision has been reached. The survey covered 139 producing wells in the older section of the field and the results showed a present daily production of 12,765,000 feet of natural gas with a theoretical content of 7,950 gallons of natural gasoline. The daily average of the wells examined was 92,000 feet of gas, which on an average gasoline content of .620 gallon of gasoline per each 1,000 feet indicated a net production of about 57 gallons of natural gasoline per well daily.

To Avoid Waste

Estimates indicate it would cost approximately $135,000 to move the company's natural gasoline plant from Signal Hill to Wilmington and make the necessary changes and connect up the wells with the gathering system. If a gathering line is installed, gas now being wasted by being blown to the air by most operators in the section of the field under discussion would be returned as fuel gas by the gasoline company for use on the leases. Inglewood Gasoline Co. under the proposed setup would install separators or traps at all wells in order to capture natural gas now wasted at desanders and production tanks. A float-controlled oil-discharge valve that is not seriously affected by sand has been developed and tested and would normally be expected to handle the sand problem incident to production activities in the Wilmington field, where wells produce a fine powdered sand. Final decision is expected to be made within two weeks by directors of the Inglewood Gasoline Co. whether the projected plant will be constructed or a line laid over to Signal Hill.

Newest POWER DRIVEN SLUSH PUMP

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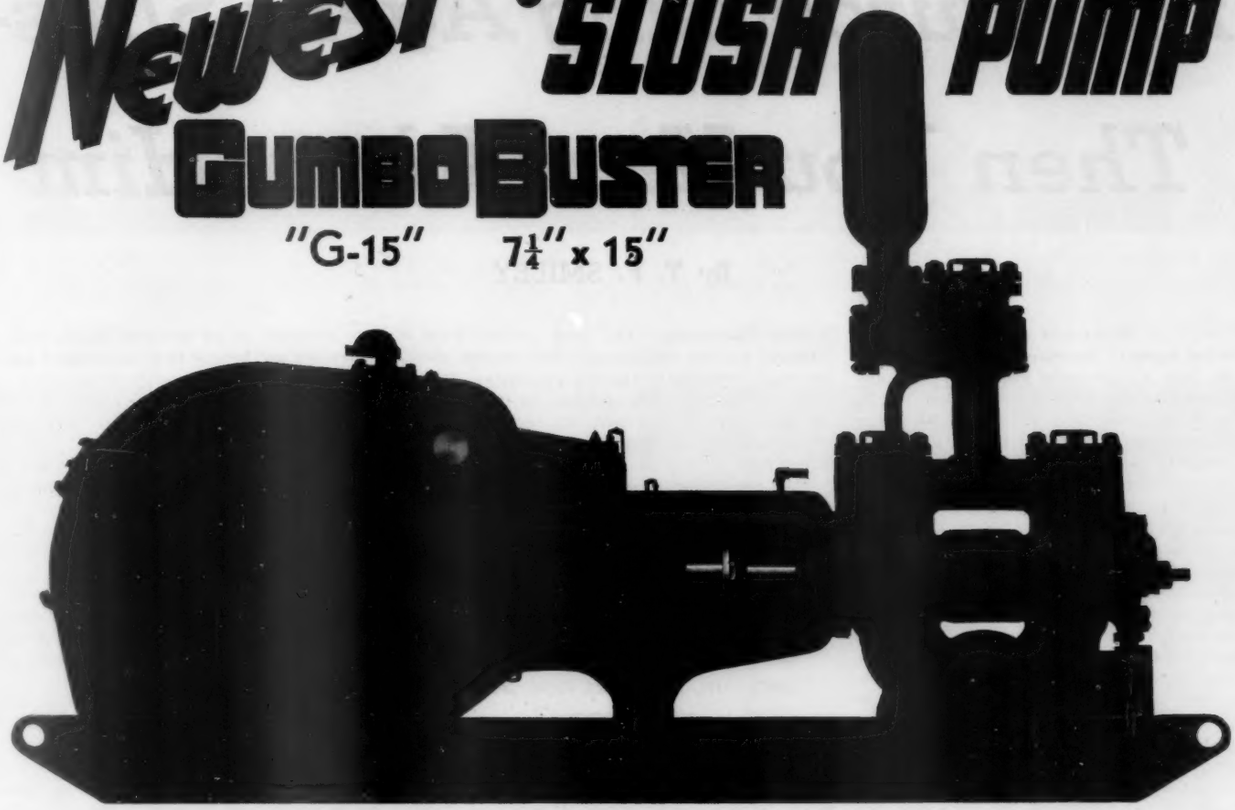

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AT THE OIL SHOW

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SEALED OFF CRANK CASE—Permits use of *Transmission Oil* for efficient lubrication of gears independent of bearings.

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OTHER FEATURES—Every one of the latest features of Power Driven Pump Design, as well as many exclusive Gumbo Buster features.

Std. Fluid End Liner Bore	7¼"
Stroke	15"
Max. Fluid Cylinder Working Pressure	2500 lbs.
Max. Hydraulic H. P. at 60 r. p. m.	250
Norman Speed Range r. p. m.	40-60
Dia. Crankshaft	9"
Dia. Piston Rod	2¼"
Gear Ratio	5.366
Weight less belts and sheaves	25,000 lbs.

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If the Purchasing Agent Slips--

Then You Hear About Him

By T. F. SMILEY

What sort of fellows are these purchasing agents? Somehow they don't often cross the line of reportorial vision. In fact, only one of them comes to mind at the moment, and he happens to be a neighbor. He's with one of the big oil companies. Easy to get along with. Likes a dog. Friendly to children and old folk—to everybody, for that matter. Looks both ways when he backs out of the driveway. Doesn't talk about the importance of his job. Never intimates that if the truth were known he should be president of the company.

Really it's strange that more has not been written about the purchasing agent. Maybe he's the forgotten man they speak of. Oh, here's something. By Elbert Hubbard. This ought to give the lowdown, for the Sage of East Aurora was a student of men and was credited with knowing all the answers.

"The typical buyer," said Fra Elberta, "is a man past middle life, spare, wrinkled, intelligent, cold, passive, noncommittal; with eyes like a codfish; polite in contact, but at the same time unresponsive, cool, calm and as damnably composed as a concrete post or a plaster-of-paris cast; a human petrification, with a heart of feldspar and without charm or the friendly germ; minus bowels, passions or a sense of humor. Happily they never reproduce, and all of them finally go to hell."

Great Jehoshaphat! No wonder the oil companies keep them out of sight. And it goes to show how easily one may be misled by the outward and visible signs of rectitude hung out by a hypocritical neighbor. The rascal! The next time he—

Say, here's a little green-covered booklet that might throw some light on a disagreeable subject. "Constitution and By-Laws of the Purchasing Agents Association." Yes, here we are. Page 9. "Article V—The Obligation." This should reveal the inner workings of a sordid organization. Harold M. Cosgrove, executive secretary of the Tulsa association, never would have allowed it to get out of his hands if he had realized what he was doing. It begins:

"All applicants for membership in this association shall assume the following obligation at the time of induction."

Sounds sinister, doesn't it? Harold never will forgive himself when he discovers what he did in an absent-minded moment. Forgive himself? Why, he'll be hunting a job as soon as this appears in print. But he has only himself to blame. There are witnesses to testify he handed over that booklet without coercion, as casually as he'd proffer a package of cigarets and say, "Have one?" Anyway, the public has a right to know what's going on. And this pledge, subscribed to by members of local associations throughout the country, is taken directly from the declaration of principles adopted by the National Association of Purchasing Agents. Let's know the worst. Bracing the feet for a shock:

Widely known purchasing agents of oil companies appear on the next and subsequent pages.

"I believe implicity in loyalty to my company; justice to those with whom I deal and faith in my profession.

"I promise to consider, first, the interests of my company in all business transactions and to carry out and believe in its established policies.

"I promise to be receptive to competent counsel from my colleagues and to be guided by such counsel without impairing the dignity and responsibility of my office.

"I promise to buy without prejudice, seeking to obtain the maximum ultimate value for each dollar of expenditure.

"I promise to strive consistently for knowledge of the materials and processes of manufacture, and to establish practical methods for the conduct of my office.

"I promise to subscribe to and work for honesty and truth in buying and selling, and to denounce all forms and manifestations of commercial bribery wherever found.

"I promise to accord a prompt and courteous reception, as far as conditions will permit, to all who call on a legitimate business mission.

"I promise to respect his obligations and to require that obligation to him and to his concern be respected, consistent with good business practice.

"I promise to avoid sharp practice.

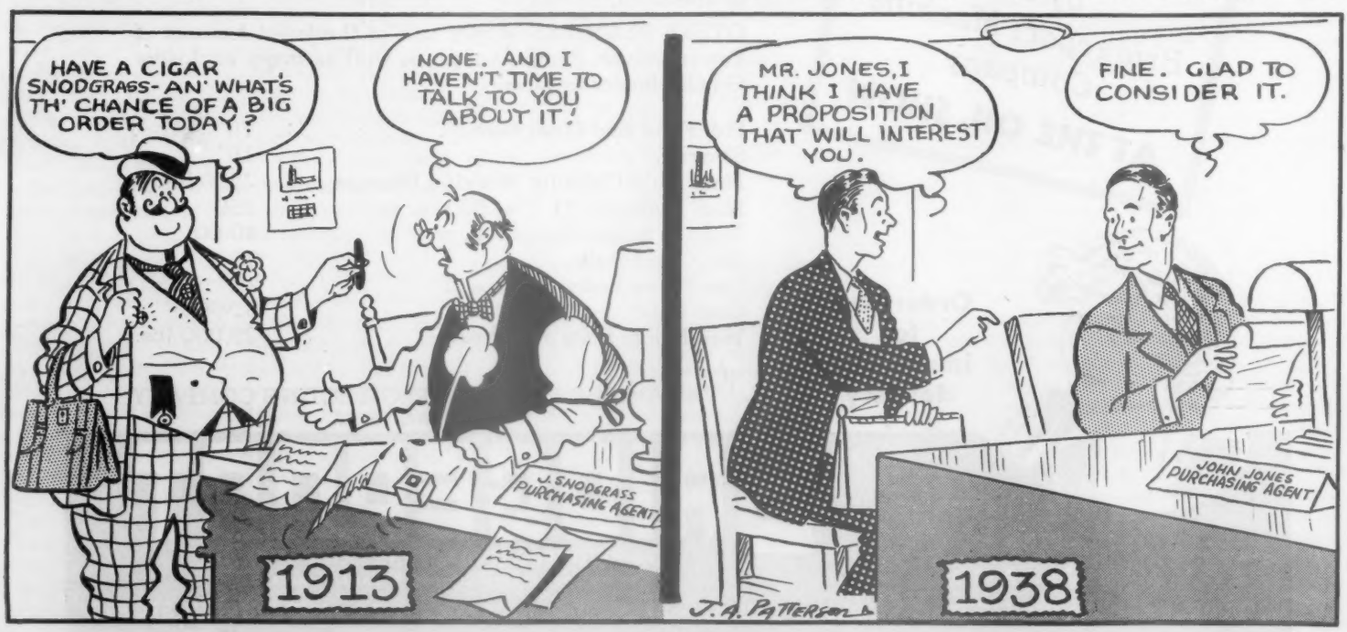
"I promise to counsel and assist fellow purchasing agents in the performance of their duties whenever occasion permits.

"I promise to cooperate with all organizations and individuals engaged in activities designed to enhance the development and standing of professional purchasing."

Well, what is one to believe? Apparently the best thing to do is to make an independent investigation.

* * *

Now where did Elbert Hubbard get such an


HAVE A CIGAR SNODGRASS- AN' WHAT'S TH' CHANCE OF A BIG ORDER TODAY?
NONE. AND I HAVEN'T TIME TO TALK TO YOU ABOUT IT!
J. SNODGRASS PURCHASING AGENT
1913
MR. JONES, I THINK I HAVE A PROPOSITION THAT WILL INTEREST YOU.
FINE. GLAD TO CONSIDER IT.
JOHN JONES PURCHASING AGENT
1938
J. A. PATTERSON

W. C. BROOKS
Los Angeles Div., Standard Oil Co. of Calif.

SAMUEL H. ELLIOTT
Standard Oil Co. of Ohio

P. W. FENTON
Tide Water Associated Oil Co.

EDWARD J. BULLOCK
Vice President, Standard Oil Co. of Indiana

J. A. ROWE
Humble Oil & Refining Co., Houston

E. W. BECK
General Petroleum Corp. of California

JEROME H. NARON
Bell Oil & Gas Co.

R. E. MEINERT
Lion Oil Refining Co.

S. A. TAYLOR
Panhandle Eastern Pipe Line Co.

C. A. PRICHARD
Mid-Continent Petroleum Corp.

B. R. NEWBERRY
Lone Star Gas Co.

J. H. WOLFE
British American Oil Producing Co.

D. G. SCHNABEL
California-Texas Oil Co., Ltd.

C. M. TAYLOR
Indian Territory Illuminating Oil Co.

J. A. WHITELY
Pan American Petroleum & Transport Co.

R. G. MARTIN
Deep Rock Oil Corp.

S. CLAY HARKNESS
Wentz Oil Co.

H. M. COSGROVE
Purchasing Agents Association of Tulsa

F. W. ROBERTSON
Skelly Oil Co.

H. C. FARQUHAR
Union Oil Co. of California

idea? All the purchasing agents contacted were familiar with his splenetic outbreak. Resentful? Bless you, no. Why, Bill James, Stanolind Oil & Gas Co., Tulsa, had it framed on his desk, so that

H. H. KELLY
Richfield Oil Co.

whenever things began to look a little blue-tinged around the edges he could turn to it and get a laugh. Bill points out that it was written in the days when salesmen were "drummers," wore loud checks, topped off with a rakish derby, and carried a pocketful of 5-cent cigars and a repertoire of stories, all of which were supposed to exert a powerful influence in gaining a hearing and landing an order.

Needed for That Kind

"That kind of salesman needed Hubbard's kind of buyer," smiled Mr. James. "Both have taken their places in the roster of extinct things."

Other purchasing agents had it preserved in various ways. For instance, O. E. McClatchey, Barnsdall Oil Co., Tulsa, had it in big type under the plate glass topping his desk. Not on his own side, but across the desk, where a visitor sits down, reads Hubbard's waspish indictment, and then looks over at Mac's infectious grin.

Anyway, the scene—if it ever was anything like the one implied by Hubbard—has changed, and this is what it is now:

The petroleum industry, it is estimated, spends a billion dollars annually in its various branches, ranging from exploratory work in the field to retail sales of its products. Most of this vast amount of money goes through the hands of purchasing agents. The buyer for an oil company often disburses from $25,000,000 to $50,000,000 in a year. Thus it is seen at the outset that the purchasing agent is an important figure in the activities of the oil company.

There will meet next week, May 23 to 26, in St. Louis, Mo., 1,400 members of the National Association of Purchasing Agents, holding its twenty-third annual convention. "Where buyways meet" is the way the association's Bulletin puts it. In connection with the convention there will be held the annual Inform-a-Show, where manufacturers will exhibit samples of their products. These manufacturers pay a moderate price for the privilege of having an exhibition booth. And when the word "moderate" is used, that is precisely what is meant. The exhibitors unhesitatingly would pay more, for the concession gets their goods right under the eyes of the very men they want to do business with.

The value set by manufacturers upon the opportunity offered by the Inform-a-Show is indicated by the fact that within 24 hours after announcements had reached them every booth was engaged. There is nothing here to support the vanishing notion that purchasing agents are a grasping, hard-boiled lot.

The national association is composed of 59 locals in the United States and Canada. The local associations are made up of companies in many lines of activity, each represented in the local association by its purchasing agent. These companies pay into the local association an annual fee, part of which is retained by the local and part turned over to the national organization.

Setup of National Association

The national association has a president, an executive secretary-treasurer, and 10 vice presidents. Nine of the vice presidents represent the nine districts into which the association's territory is divided. The tenth is a vice president at large, an office to which each retiring president automatically succeeds. The president and the 10 vice presidents form the executive committee. The association has more than 5,000 members. National headquarters are maintained in New York. Each local association has its president, secretary, and a national director. The last named acts as contact man between the national and the local associations, and he is the accredited representative at the meeting of these directors held in connection with the annual conventions.

Inside the national association are various groups, composed of purchasing agents represent-

R. E. CAMPBELL
Sunray Oil Co.

GEORGE H. BARRY
Superior Oil Co.

W. M. STURGES
Anderson-Prichard Oil Corp.

CURT OPPEL
Dallas Division, Atlantic Refining Co.

W. C. TAYLOR
Standard Oil Co. of Louisiana

O. G. JACKSON
El Dorado Refining Co.

H. D. NELSON
Coline Oil Corp.

T. H. RIGGIN
Wilcox Oil & Gas Co.

ing certain lines of business. Each of these has its chairman. Each is allotted out of the funds of the parent organization such money as it may need to cover expenses entailed in the collection and dissemination of information valuable to the group. Membership in a group is open to all purchasing agents (members of the national body of course) whose interests lie in its field. A roster of members is kept for the purpose of exchanging information. There are no dues.

Important Buying Group

One of the largest and most important of these groups is the one comprising oil company buyers. Mr. McClatchey, of Barnsdall, is chairman. Mr. Cosgrove, executive secretary of the Purchasing Agents Association of Tulsa, is secretary of the oil company buyers' group. Though it is true the oil company purchasing agent is interested especially in products designed for the oil industry use—derricks, casing, pumps, sucker-rods, etc.—the range of oil company needs is so wide that the buyer who would keep himself informed must watch developments in many lines other than his own.

At the convention in St. Louis next week the oil company buyers group will hold a sectional meeting to discuss problems of particular interest to purchasers of oil industry materials and to elect officers for the coming year. A meeting for preliminary discussion will be held at the Tulsa Club Saturday, May 21, by members of the group in Tulsa attending the International Petroleum Exposition.

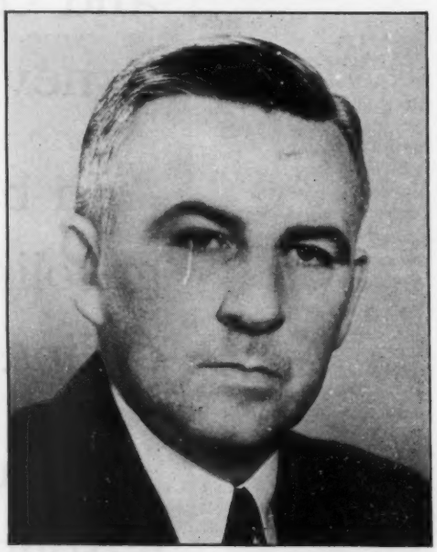
Somebody, in the grip of a bilious attack perhaps, once snarled, "A purchasing agent is a man who knows the price of everything and the value of nothing." Which illustrates how far it is possible to get from the truth if one tries earnestly and energetically. Anybody suffering from the illusion that the purchasing agent's job consists in matching his wits against those of the salesman and wrangling over prices might well take a look at the reading material that flows in a steady stream to the buyer's desk and which he must read and digest if he would keep abreast of developments in this profession and familiarize himself with values.

Here, for example, is an exhaustive study of "Economic Implications of the New Spending Program" by A. W. Zelomek, noted economist. Here is a report of the national association's business survey committee on general conditions, commodity prices, inventories, collections, credit, employment, and buying policy. Here are discussions by experts on such subjects as "Selling Under the Robinson-Patman Act," "New Federal Trade Commission Act Amendments," "Purchasing Procedure and Regulations," and so on. A large part of the material comes from the headquarters of the national association, which incidentally has become one of the most valued fact-finding institutions in the country. Colonel Leonard P. Ayres, widely known financial commentator, of the Cleveland Trust Co., has referred to the information on business trends gathered by the association as among the most trustworthy obtainable.

Trade Currents Watched

The facts upon which the association's reports are based are collected carefully and systematically. Members of the association in all parts of the country, selected for their fitness, keep a close watch on trade currents and report to the association at regular intervals. These reports then are summarized by the businss survey committee and issued in the form of survey reports to all members. The survey reports, with an established reputation for accuracy and unbiased comment, are sought by economic and investment analysts.

Doubtless there was a time when suspicion and unconcealed hostility marked the attitude of



W. H. O'CONNOR
Continental Oil Co.

the salesman and the buyer toward each other. They were looked upon as natural enemies. Probably they regarded themselves that way. "Caveat emptor" was a watchword. Let the buyer beware. The relationship that now exists in an ordered

B. E. RAGAN
Tulsa Division, Atlantic Refining Co.

E. S. EDWARDS
Continental Oil Co. of California

W. G. FREITAG
Republic Production Co.

J. LUCAS
Arkansas Fuel Oil Co.

Always

In good seasons, Dubbscracked gasoline commands the market and commands the price—there is never enough to go round

In bad seasons, Dubbscracked gasoline goes to market when ordinary gasoline goes to storage

In all seasons—Dubbscracked gasoline

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

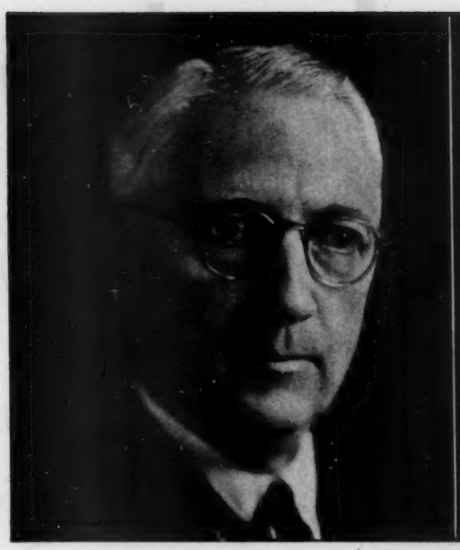
business world between the man who buys and the man who sells is expressed succinctly by E. F. Watkins, manager of purchases for the Southern California Edison Co., Los Angeles, in a talk before a joint meeting of sales managers and purchasing agents in Los Angeles. Said Mr. Watkins:

"Real Friend of Mine"

"When I am acting in my capacity as a buyer the man who is most welcome in my office is he who has proved himself to be a keen analyst of the needs and operating problems of our business—the man who digs in and finds out what our operating problems are, how the constructive ideas of our operating men can be translated into practical equipment which will reduce our costs, improve our product and enable us to give better service. In other words, that seller in spirit puts himself for the time being on our pay roll and then devotes the facilities of his engineers and laboratory men to develop and bring out the thing that will do the job for us. I can name a considerable number of such men who have consistently pursued that kind of attitude for years, and the result of their work has been tangible and definite in reducing our costs and improving our service. So far as he is concerned he has established the best possible kind of relationship with me. I am always glad to see him because he has proved to me in the most convincing way that he is a real friend of mine and my business.

"When that kind of sales representative has thus executed his part of the bargain, the good relationship depends upon my recognizing that he is entitled to a proper reward for the initiative, energy, and enterprise that he has demonstrated. It is good business judgment for me to encourage him to carry on. I consider him entitled to the business which results from his energy and enterprise, just as a matter of decency and common sense, for a sufficient time at least to reward him amply and to establish a confident expectation on his part that we are not going to ditch him the first time some competitor comes along with a Chinese copy of the development he has made.

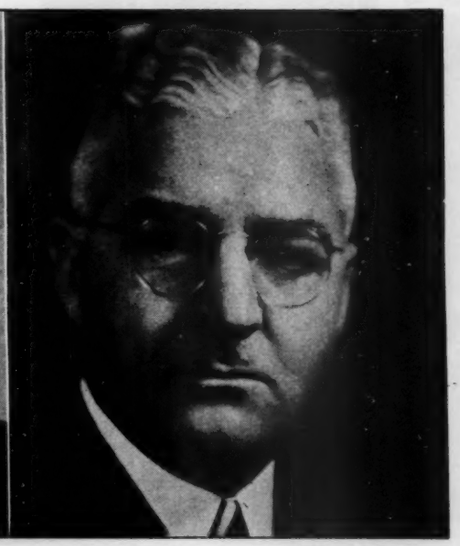
"The salesman whose initiative and enterprise are devoted to our good service is entitled to his reward, whether his product is covered with patents or not, and we buyers can exercise a strong influence in preventing these unfair raids by placing business where it is earned."



C. B. SINGLETON
Shell Petroleum Corp.

O. D. STORY
Houston Division, Shell Petroleum Corp.

J. M. SITLER
Standard Oil Co. of New Jersey



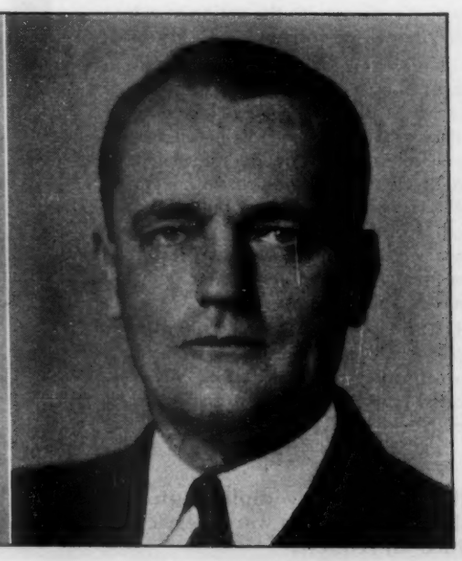
J. W. CASTERTON
Standard Oil Co. of New Jersey

It has become almost axiomatic that the more capable a purchasing agent is, the less is heard about him. But if he makes mistakes, if troubles buzz around his head, he is the most talked-of man in the organization. So long as he keeps the stream of materials flowing smoothly, little attention is paid to him. Many an oil company purchasing agent revealed his true worth last year when the activity in producing and development work, along with abnormal situations that arose, made it difficult to keep track of trustworthy sources of supply and thus avoid costly delays in important projects. It will be remembered that strikes and walkouts, floods, shortage of carriers, especially by water—these and other troubles—laid upon the purchasing agent a demand for farsightedness, a knowledge of conditions, a grasp of details, and finesse of a high order.

Water usually affords the least expensive mode of transportation, and it is taken advantage of by the purchasing agent, acting in cooperation with the traffic manager, whenever possible. For an extended period in 1937 there was a shortage of bottoms, both oceangoing and river. As a result oil-field equipment of various kinds piled up at port cities on the Atlantic Coast. Oil companies thereupon turned to the railroads to move the needed material westward. Quickly the railroad

(Continued on Page 71)

W. L. JAMES
Tulsa Division, Stanolind Oil & Gas Co.



TOM MASSINGILL
Fort Worth Division, Stanolind Oil & Gas Co.

Again Asbestos Fights Corrosion for the Oil Industry

Four years' use by major oil producers proves superiority of Transite Pipe for salt-water lines

UNSKILLED CREWS assemble Transite Pipe easily and quickly with Simplex Couplings. A simple chain puller is the only tool required.
TRANSITE PIPE, because of its asbestos-cement composition, is exceptionally resistant to the action of salt water inside, corrosive soil outside.
LIGHT WEIGHT cuts the cost of bringing J-M Transite Pipe to the job . . . saves time and money on every handling operation.
WIDE SWEEPS offer no problem. Flexible Simplex Couplings permit laying straight sections of Transite Pipe on curves . . . yet make permanently bottle-tight joints.

FIGHTING corrosion is no new job for that magic mineral—asbestos. J-M Asbestos Products have been doing that—both in the field and in the refinery—since the early days of the oil industry.

Today, asbestos is attacking the corrosion problem on a new front—this time in the form of Transite Pressure Pipe for salt-water disposal lines.

Used for over four years by leading oil producers, Transite's superiority in this service has been thoroughly proved. Installations totaling many miles of pipe have been setting new records for long life and minimum maintenance.

This outstanding performance is due to Transite Pipe's asbestos-cement composition and its unusual resistance to the action of salt water inside, corrosive soil outside.

Long life is only one of Transite Pipe's many advantages. Its smooth interior wall assures high carrying capacity. Handling and installation costs are unusually low due to its light weight, long lengths and ease of assembly. Simplex Couplings not only assure rapid, economical installation, but also make bottle-tight joints that prevent crop damage and ground-water pollution due to leakage.

If you are not now using Transite Pipe for salt-water lines, may we send you complete information? Write Johns-Manville, 22 East 40th Street, New York, N. Y.

THIS NEW BROCHURE contains complete information on Transite Pressure Pipe for water service. A copy may be obtained on request.

JOHNS MANVILLE JM PRODUCTS

Johns-Manville TRANSITE PRESSURE PIPE

An Asbestos Product

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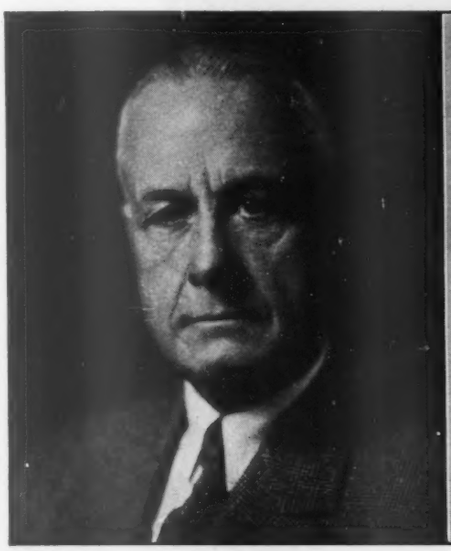
Pure Oil Co.

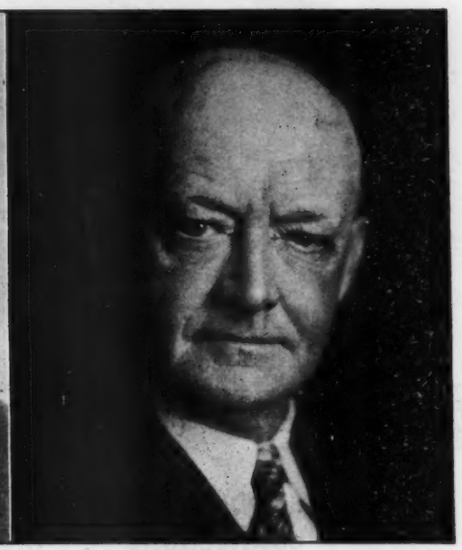
E. E. EDWARDS
Fort Worth Division, Pure Oil Co.

J. W. SHIELDS
Tulsa Division, Pure Oil Co.



A. F. COLLING
Mgr. P. D., The Texas Co. (Del.)

C. W. CHANDLER
The Texas Co. of California



R. G. DAWSON
Houston Division, The Texas Co.

HENRY THOMAS
Sun Oil Co.

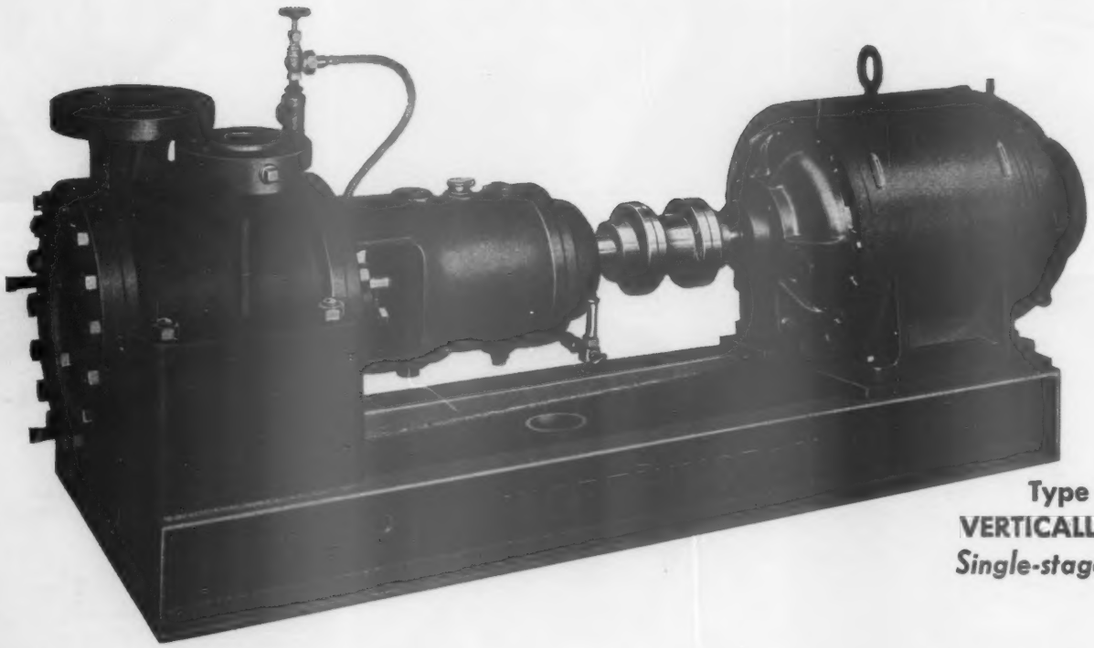
T. C. HALLER
Tulsa Division, Sun Oil Co.

I. C. JARED
Dallas Division, Sun Oil Co.

Introducing...

A New Centrifugal Refinery Pump

by Worthington



Type H
VERTICALLY SPLIT
Single-stage volute

Features:

- **SADDLE-MOUNTED** . . . Pump supported at its center line under the pipe connections . . . preventing misalignment.
- **CANTILEVER SHAFT CONSTRUCTION** . . . prevents shaft deflection in the stuffing box.
- **RESERVOIR SUCTION HEAD** . . . prevents vaporization in the suction and permits access to the impeller without disturbing pipe connections.
- **SELF-VENTING VOLUTE** . . . prevents vapor binding.

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TULSA
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NEW YORK
PHILADELPHIA
PITTSBURGH
ST. LOUIS
ST. PAUL
SAN FRANCISCO
SEATTLE
TULSA
WASHINGTON

CPB-5A

(Continued from Page 67)

yards became congested. In this trying situation the purchasing agent who had studied trends so that he could foresee what was coming, and thus was able to get equipment through to the spot where his company needed it, had every reason for self-congratulation. But did you hear much about it?

Then there were the spring floods which in great areas paralyzed transportation and closed industrial plants upon which oil companies were depending for material. More than one purchasing agent acquired an extra star for his crown in those perplexing days.

The purchasing agent must combine prophetic vision with penetrating business acumen. The production superintendent and the engineer often are pressed by immediate problems of their own, and they may not forecast their equipment requirements far ahead. To avoid interruption of work the purchasing agent must be able to anticipate his company's needs. He usually does it with marvelous accuracy.

An illustration of farseeing work by purchasing agents is afforded right at this juncture in connection with the evolution of the East Texas field. There are some 25,000 wells in that field

D. H. F. MacPHERSON
Gilmore Oil Co.

JOHN P. DAVID
Magnolia Petroleum Co.

C. D. TAYLOR
Assistant Purchasing Agent, Barnsdall Oil Co.

H. E. KOOPMAN
General Purchasing Agent, Phillips Petroleum Co.

M. B. HEINE
Phillips Petroleum Co.

A. W. CLINGER
Pennzoil Co.

C. F. YOUNG
Houston Division, Stanolind Oil & Gas Co.

J. C. DAVIS
Texas Pacific Coal & Oil Co.

GEORGE H. FRITZ
Superior Oil Corp.

HARRIS BATEMAN
Cities Service Oil Co. (Delaware)

E. D. ERNEY
Cities Service Oil Co. (Pennsylvania)

now, with others being drilled at the rate of 150 a month. Eventually about 32,000 wells will have been completed. Some of the wells already have passed their flowing period and are being pumped. Eventually all will be. It is predicted that a day will come when distracted producers will be pleading for pumping equipment, with manufacturers hard pressed—perhaps unable—to respond to entreaties.

That day has been prepared for by some purchasing agents, who have entered into contracts with manufacturers to insure possession of needed equipment. One large company is installing about 50 pumps each month. These pumps are placed on

F. R. OLDHAM
Houston Division, Gulf Oil Corp.

V. C. FULLER
Tulsa Division, Gulf Oil Corp.

the block, without engine or belt, awaiting eventualities. If the well pressure suddenly subsides, the required engine and belt can be put in place readily.

The purchasing agent must know when to buy, for prices of oil industry equipment go up and down as do those of hams and artichokes. Familiar with price trends through study of reports, the buyer makes few blunders here. One of the things he has learned is that price changes appear first in the east and work westward. That knowledge helps.

The National Association of Purchasing Agents,

O. E. McCLATCHEY
Barnsdall Oil Co.

W. S. CEDERLOF
Barnsdall Oil Co. of California

LEON BOOTH
Selby Oil & Gas Co.

with headquarters in New York, is a cooperative professional body, working to advance the standards and standing of purchasing and purchasers, and collectively to solve problems that develop with the widening recognition of the importance of this department of a company's life. It brings together men facing similar problems and gives them the advantages of cooperation and interchange of ideas. The association is regarded as one of the best-organized, most soundly conducted and most helpful societies of its kind in existence. With $60,000 in high-grade securities in the Chase National Bank in New York, it is without financial worries.

In addition to the survey reports and other literature which the association provides, it has expended $40,000 on an educational program. The central feature of this program is three looseleaf books. A special committee has been working on the production of these volumes for several years. The first one, already off the press, contains the history of some 150 commodities. The two others will be devoted to purchasing procedure. All three will be kept up to date by additions and substitutions as needed.

"Industrial Purchasing," a book of 500 pages by Howard T. Lewis, professor of marketing in the graduate school of business administration, Harvard University, is designated as the official publication of the National Association of Purchasing Agents. The association underwrote publication of this work, which is sold to members. The three other books published in pursuance of the association's educational program, are distributed to the association membership.

Various universities have installed courses in purchasing with the cooperation of the association. The one at Harvard is probably the best-known.

And finally, it is said of the purchasing agents that their meetings, including the national convention, are among the most businesslike, the most devoid of horseplay of any held by business, professional, or technical organizations.

Rumania Modifying Laws Affecting Oil Operations

Rumania is embarked on a campaign to loosen the bonds which have all but strangled the oil industry in that country during the past few years. At the end of 1937 Rumanian production had fallen so sharply relief from operating restrictions was practically forced upon the government.

More recently figures have come to hand showing petroleum exports from Rumania to have declined more than 20 per cent to a total of 42,825,000 bbls. in 1937, compared to 51,886,000 bbls. in 1936, giving further evidence that something had to be done if the trend was to be arrested.

First steps have been taken with a view to bringing the mining law into line with the need for new oil discoveries and development of reserves. First on the list of reliefs effected and promised by the government is greater freedom in currency operations and a reduction in taxes on exports. The taxation on exports will be somewhat alleviated and exporters will receive progressive allocations of free currency, while greater freedom in the transfer of payments for imported machinery and spare parts has been promised. The oil industry will also be allowed to make payment in foreign exchange for purposes for which currency permits were hitherto granted on a very limited scale. Measures designed to stimulate the export trade include the appointment of a royal commission for the organization and direction of mineral oil exports, whose members include several leading oil industrialists.

Petroleum exporters will be permitted to retain 20 per cent of the free currency obtained from exports and an even higher percentage if oil exports exceed a certain limit. This currency allocation will, however, be allowed only in case of shipments made to countries with strong currencies and without exchange restrictions; it will increase by 2 per cent if shipments exceed the limit by 10 per cent in any quarter; by a further 3 per cent for the second 10 per cent increase and by an additional 5 per cent when sales to free-currency countries amount to a further 10 per cent.

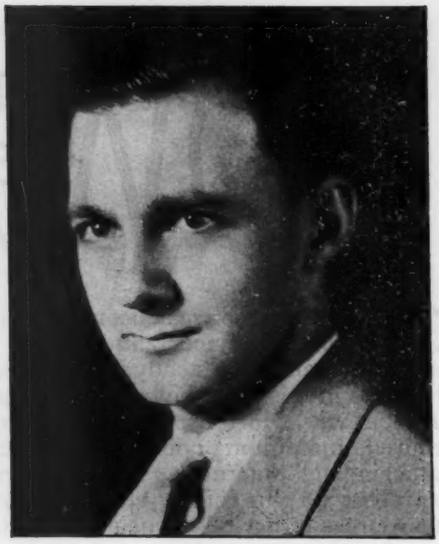
The oil companies which have obtained free currency through export trading may dispose of it in the following order:

In payment for imports of materials necessary to the petroleum industry, insurance abroad, salaries, pensions and administrative expenses genuinely incurred abroad.

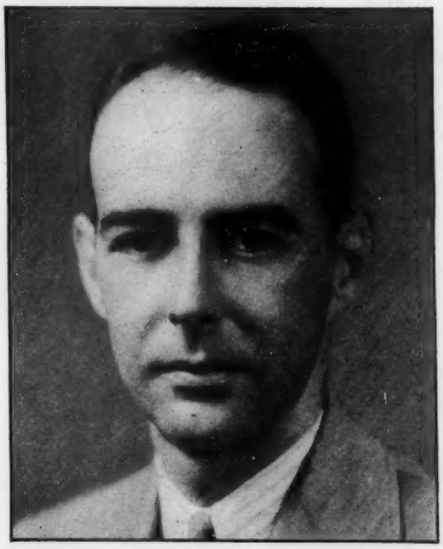
For the transfer of interest on capital, dividends for the previous year or even for the last two years, commissions due abroad, reserve funds, and the like.

For dividend purposes a special foreign currency fund, held by the National Bank of Rumania, may also be at the disposal of the companies. Trade with those countries where payments abroad are restricted, that is, Germany, Austria, Hungary, Czechoslovakia, Poland, Italy and Turkey, will remain subject to the regulations hitherto in force and will therefore be excluded from the allocation and transfer of free currency. There remain to be handled the restrictions placed on foreign companies in acquisition of exploration permits. Since the exploration permits are dealt with specifically in the mining law it is necessary to consider revision at some session of parliament. With the royal commission functioning, it is anticipated greater freedom in applying for and in acquiring exploratory permits will be forthcoming. Under the present mining law restrictions the large Rumanian companies have little incentive to explore new areas.

C. F. MARTIN
Northern Natural Gas Co.

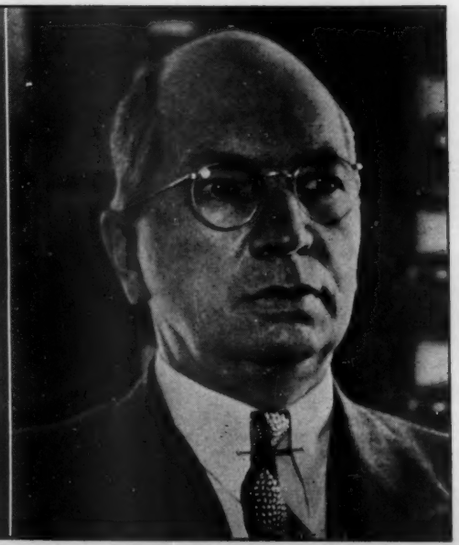


R. W. NIX
Atlas Pipe Line Corp.



J. D. BROWN
General American Oil Co.

W. R. BROWN
Tulsa Division, Ohio Oil Co.

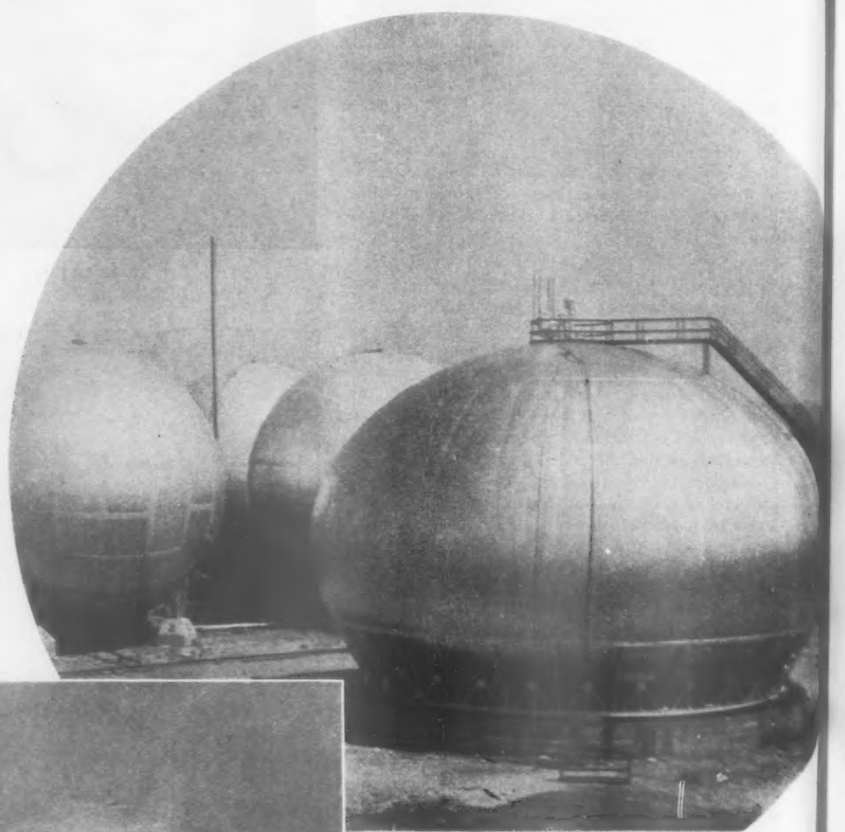


W. A. STEPHENSON
Ohio Oil Co. of California

HOW TO MAINTAIN A STEADY SUPPLY OF RAW MATERIALS AT POLYMERIZATION PLANTS

ONE of the problems encountered in the operation of polymerization plants has been the maintenance of a steady supply of raw gases. Pioneers in this field, however, have solved the problem with Hortonspheres and have thereby secured maximum operating efficiency. By gathering light natural gasoline hydrocarbons as well as surplus refinery tail gases from various sources at periods of peak production, they have found it practical to store up a reserve supply ample to take care of the low spots.

With the Hortonsphere and the Hortonspheroid, it is easy to fit the exact requirements for any plant. The Hortonsphere is widely used for holding both gas and liquids at pressures of from 25 to 100 lbs. per sq. in. or higher and is built in standard sizes of from 1,000 to 12,500-bbls. The Hortonspheroid is used to store liquids under pressures from 2½ to 25 lbs. in sizes up to 30,000 bbls. and capacities up to 100,000-bbl. units for a maximum pressure of 15 lb. per sq. in. For complete information or quotations, address our nearest office.



These pictures show an installation of one 30,000-bbl. Hortonspheroid for holding volatile liquid at pressures up to 15 lbs. per sq. in. and four 57½ ft. dia. Hortonspheres for storing gases at pressures up to 50 lbs. per sq. in. in a refinery in the West Indies.

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New York	3347-165 Broadway Building
Philadelphia	1615-1700 Walnut Street Building
Boston	1517 Consolidated Gas Building
San Francisco	1054 Rialto Building
Los Angeles	1423 Wm. Fox Building

Fabricating Plants at BIRMINGHAM, CHICAGO, and GREENVILLE, PA.

HORTON PRESSURE STORAGE

Mid-Continent Refinery Runs Show Only Minor Change During May

By D. H. STORMONT

Refinery runs to stills in the Mid-Continent will be held at approximately April levels during this month, according to estimates made at the first of May. Following a 40,000-bbl. daily advance in runs during April, refiners this month are decreasing their schedules by the comparatively small amount of 4,800 bbls., to a daily total of 527,545 bbls. The total represents a decrease of almost 50,000 bbls. as compared with runs of a year ago, and if the daily runs are held at this estimated figure throughout the month, gasoline inventories in the Mid-Continent should show a substantial decline.

Refinery runs in the United States during the first four months of this year have been consistently well above those of 1937, but in recent weeks have shown a steady decline until they are now appreciably equal to those of a year ago, according to A.P.I. figures. In the Mid-Continent, however, and especially in Oklahoma and Kansas, daily runs during this period were nearly always under those of a year ago. Thus, while present stocks of motor fuel for the total United States are about 8,000,000 bbls. above those at this time in 1937, inventories in the Mid-Continent are over 700,000 bbls. lower. But in spite of curtailment steps taken by the Mid-Continent refiner, prices on almost all Group 3 products are substantially below those of a year ago.

Oklahoma Runs Higher

Oklahoma refiners, after cutting back on their daily runs for several months, during May will increase their schedules by 6,380 bbls. to a daily total of 145,410 bbls. This total, however, is still some 23,000 bbls. below that of May, 1937, due mainly to the fact that five refineries which were operating at that time are now closed down. Barnsdall Refining Co.'s plant at Barnsdall was closed down temporarily the first of the month and was not expected to be placed in operation during May. Its Okmulgee plant, as well as that of Globe Oil & Refining Co., Cushing Refining Co.'s Blackwell plant and Sooner State's Oklahoma City plant will all be closed during May. Eason Oil Co., after being shut down for several months, has reopened its Enid plant and will run some 2,000 bbls. daily during the month. Pure Oil Co. likewise has reopened its Muskogee plant and will process some 3,000 bbls. daily.

In Kansas refiners are cutting back their daily runs to the lowest point of the year, some 127,000 bbls. daily. This reduction was accomplished largely through fairly large reductions in some of the larger refineries, most of the smaller plants showing runs varying but little from those of last month. No new plants were reported shut down in that state although Shell Petroleum Corp. has announced plans for closing its plant at Arkansas City in the near future.

Two Plants Shut Down in Louisiana

The North Louisiana district shows a decline of 5,600 bbls. in daily runs as compared with last month. Shoreline Oil Co.'s plant at Lewis was shut down again this month after operating during April. Also East Texas Refining Co.'s plant was closed. The latter plant has been operating at 4,500 bbls. daily or higher since it was acquired from Griswold Refining Co. some months ago. One new plant was to be placed in operation during May, that of Co-Service Oils, Inc., at Princeton. The plant was testing at the first of the month but was expected to be placed in regular operation soon.

In East Texas schedules are much the same as in April, the total for the district being slightly over 1,000 bbls. higher for May. The plants of Solvex Refineries, Inc., McMurrey Petroleum Corp. and Tower Refining Co. were expected to remain closed during the month. Premier Oil Refining Co. has reopened its Willow Springs plant, after reportedly having contracted for some 70,000 bbls. of Schuler crude, and is operating at about 2,700 bbls. daily.

The other districts comprising the Mid-Continent area shows only minor changes in total runs. Individual operating schedules likewise show comparatively little change in these areas.

Mid-Continent Crude Runs

Average Daily (Barrels)

(Advance estimate compiled by The Oil and Gas Journal)

	1936	1937	1938
January	501,600	531,535	529,710
February	519,960	541,790	507,985
March	478,760	533,875	491,935
April	506,775	558,385	532,120
May	513,510	572,855	527,095
June	527,225	593,625	.....
July	539,370	605,640	.....
August	557,650	624,475	.....
September	553,215	625,485	.....
October	536,330	619,210	.....
November	548,015	592,170	.....
December	535,500	544,040	.....

Operations by Refinery Districts

Daily crude runs

	May	April	Decr.
Arkansas	27,650	27,470	*180
East Texas	54,840	56,035	1,195
Kansas	126,510	130,865	4,355
N. Central Texas	38,185	37,030	*1,155
North Louisiana	43,200	48,800	5,600
Oklahoma	145,570	139,030	*6,540
Southwest Texas	14,040	15,325	1,285
W. Texas Panhandle	77,320	77,565	245
Total	527,315	532,120	4,805

*Increase.

Estimated Daily Average Mid-Continent Refinery Crude Runs for May

ARKANSAS

Company and location—	Daily capacity	Av. dly. runs— May	April
Berry Asphalt Co., Waterloo	2,000	1,300	1,100
Henry H. Cross, Smackover	6,000	4,000	3,500
Lion Oil Ref. Co., El Dorado	17,000	14,000	13,800
Macmillan Pet. Corp., Norphlet	2,500	2,000	2,000
Root Pet. Co., El Dorado	10,000	6,000	6,670
Stephens Ref. Co., Stephens	700	350	400
Total	38,200	27,650	27,470

KANSAS

Barnsdall Ref. Co., Wichita	5,000	5,000	5,000
Bay Pet. Co., McPherson	3,500	3,000	1,500
Chanute Ref. Co., Chanute	1,000	700	700
Chase Ref. Co., Chase	800	(*)	(*)
Derby Oil Co., Wichita	8,000	5,500	6,000
El Dorado Ref. Co., Eldorado	6,000	3,500	3,500
Falcon Ref. Co., Inc., Great Bend	1,000	500	700
Globe Oil & Ref. Co., McPherson	13,000	11,500	13,000
Kanotex Ref. Co., Arkansas City	12,000	5,000	5,500
National Ref. Co., Coffeyville	8,000	4,200	4,200
Pet. Products Co., Chanute	800	600	600
Phillips Pet. Co., Kansas City	23,000	16,610	17,165
Roper Pet. Co., Parsons	400	300	300
Shallow Water Ref. Co., Scott City	2,000	1,000	1,000
Shell Petroleum Corp., Arkansas City	20,000	10,000	12,000
Sinclair Ref. Co., Coffeyville	12,000	7,200	7,500
Sinclair Ref. Co., Argentine	11,000	7,100	7,100
Skelly Oil Co., Eldorado	23,000	18,500	18,500
Socony-Vacuum Oil Co., Inc., Augusta	20,000	17,000	17,000
Standard Oil Co., (Indiana), Neodesha	7,500	5,600	5,600
United Ref. Co., Russell	1,200	700	700
Vickers Pet. Co., Potwin	4,000	3,000	3,300
Total	183,200	126,510	130,865

*Shut down.

EAST TEXAS

Beacon Oil & Ref. Co., Henderson	4,500	150	200
Cascade Ref. Co., Reed Switch	3,000	1,900	1,900
Clay Ref. Co., Arp	3,500	3,400	3,600
Danciger Refs., Inc., Longview	6,000	4,500	5,000
East Texas Ref. Co., Longview	10,000	6,000	7,250
Hurricane Pet. Corp., Overton	5,000	4,000	3,170
Hurricane Pet. Corp., Arp	3,300	2,850	2,500
Lacy Ref. Co., Kilgore	3,000	2,500	2,650
Magnolia Pet. Co., Corsicana	5,000	5,040	4,865
Martin Ref. Co., Gladewater	3,000	1,000	2,500
McMurrey Pet. Corp., Tyler	10,000	(*)	(*)
Premier Oil Ref. of Texas, Willow Springs	4,000	2,700	(*)
Paluxy Asphalt Co., Talco	5,000	2,700	2,700
Sinclair Ref. Co., Camp Switch	4,000	2,300	2,400
Solvex Refs., Inc., Gladewater	4,500	(*)	(*)
Southport Pet. Co., Kilgore	4,000	3,000	3,000
Talco Asphalt & Ref. Co., Mt. Pleasant	7,000	5,000	5,000
Texas Co., The, Dallas	16,000	7,800	7,600
Tower Ref. Co., Overton	3,500	(*)	(*)
Utah Ref. Co., Kilgore	2,000	(*)	1,700
Total	105,300	54,840	56,035

*Shut down.

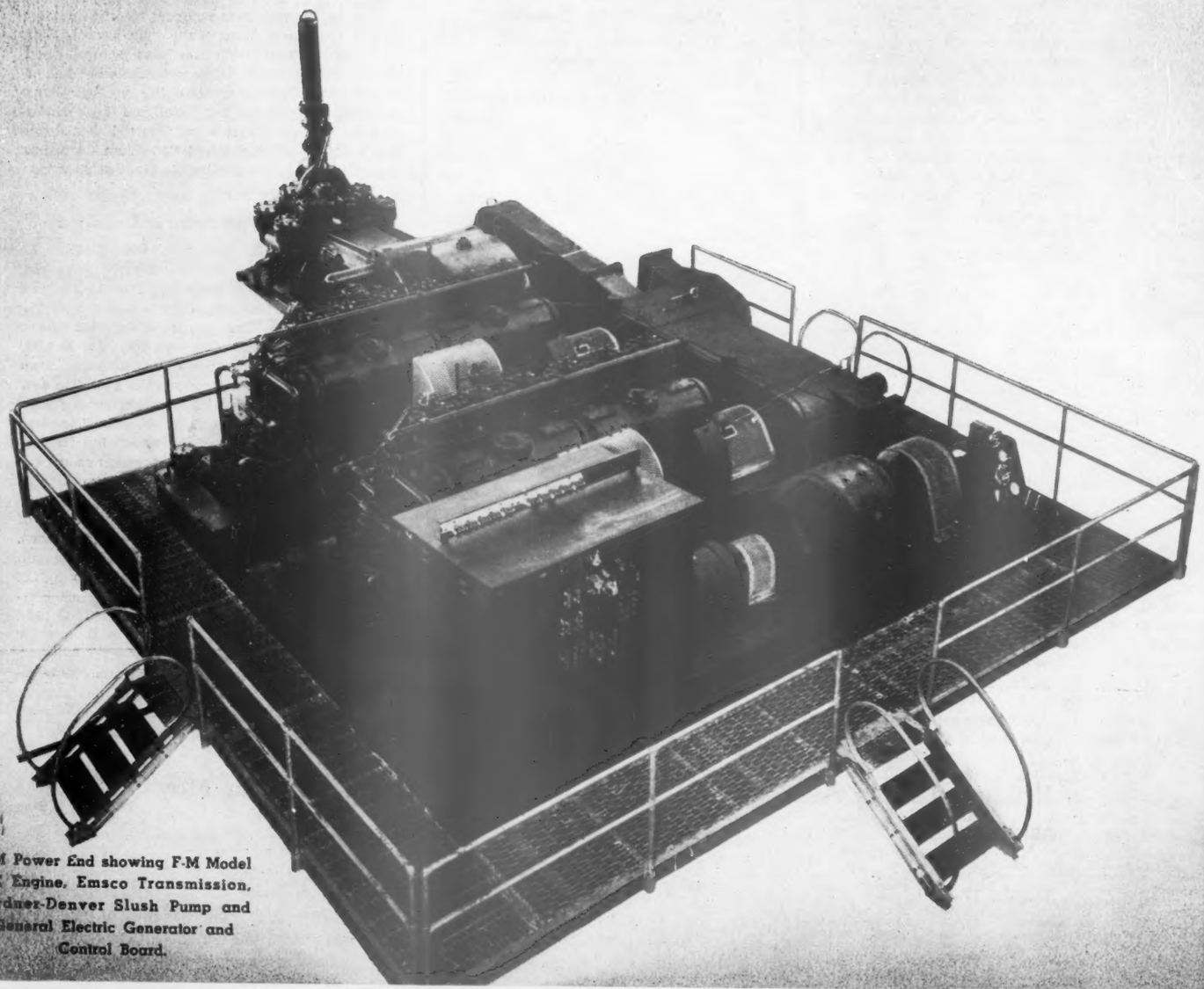
NORTH CENTRAL TEXAS

Baird Ref. Co., Baird	1,500	1,300	1,200
Bryson Pipe Line & Ref. Co., Bryson	2,000	1,200	1,100
Coleman Ref. Co., Coleman	500	170	170
Continental Oil Co., Wichita Falls	6,000	4,500	4,400
Exchange Pet. Corp., Albany	800	(*)	(*)
Falls Ref. Co., Wichita Falls	2,500	500	600
Denver Prod. & Ref. Co., Gainesville	3,000	1,100	1,000
Graham Ref. Co., Graham	500	200	220
Gratex Ref. & Fuel Oil Co., Graham	500	250	270
Gulf Oil Corp., Fort Worth	8,000	6,400	5,100
Hightower Oil & Ref. Corp., Brownwood	750	100	100
Jacksboro Ref. Co., Jacksboro	250	100	60
La Salle Pet. Co., Burkburnett	3,000	650	600
Magnolia Pet. Co., Fort Worth	7,500	4,870	6,340

(Continued on Page 153)

KEM Electro-Mechanical RIG

MEETS TODAY'S DRILLING PROBLEMS



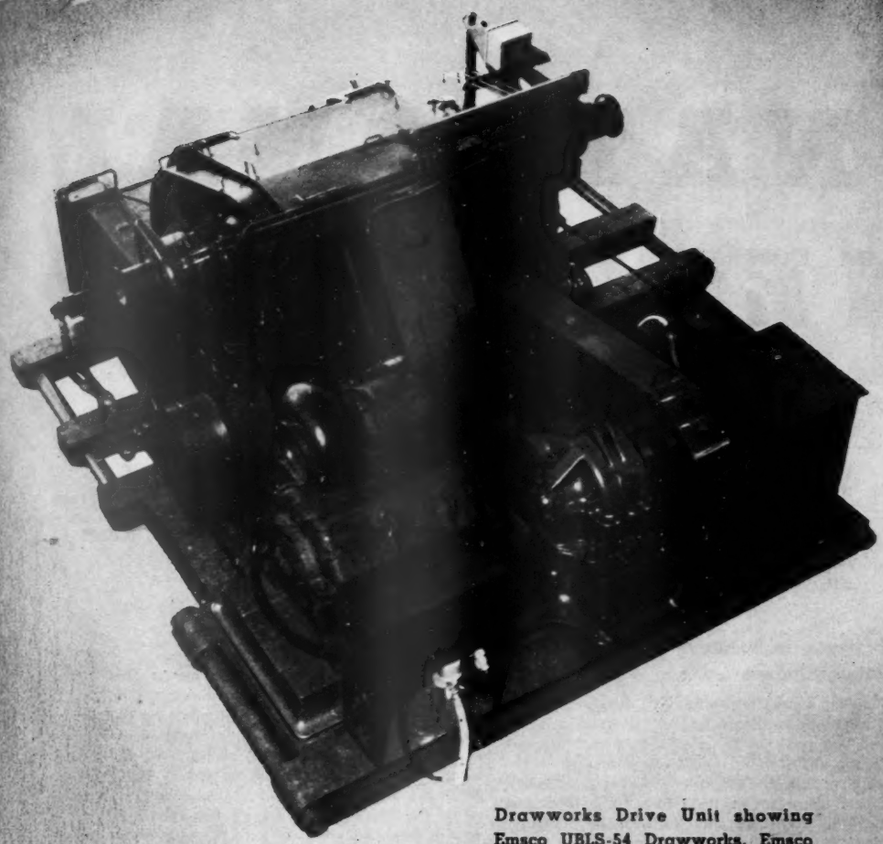
KEM Power End showing F-M Model 35-E Engine, Emsco Transmission, Gardner-Denver Slush Pump and General Electric Generator and Control Board.

The KEM Electro-Mechanical Drilling Rig answers the long demand for a rig to combine the advantages of a mechanical slush pump drive with the inherent flexibility of electric drawworks operation. An efficient chain drive to the slush pumps gives maximum utilization of engine power. The electrical drawworks drive makes possible exceptionally fast—yet smooth—starting, stopping, accelerating and reversing.

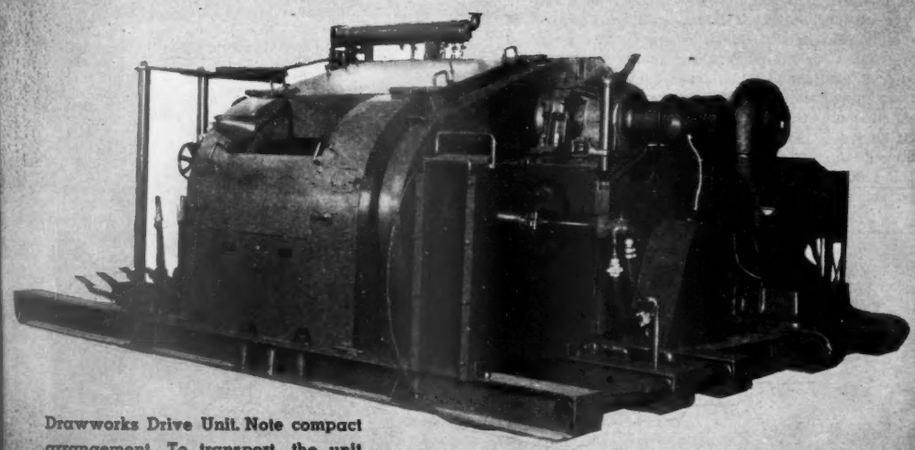
Extreme simplicity has been the prime objective.

Fairbanks-Morse Model 35-E slow speed, two cy Diesel engines offer minimum maintenance expe The Emsco Type "K" totally enclosed transmis offers unequalled compactness. With a long record dependable service, the Gardner-Denver Pump p vides hole after hole of trouble-free drilling.

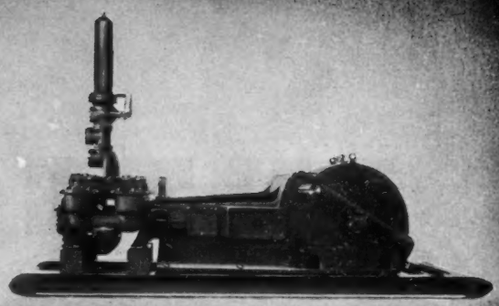
For convenient portability, the rig is broken do into a number of units all mounted on individual s boxes. Send for bulletin giving complete informa



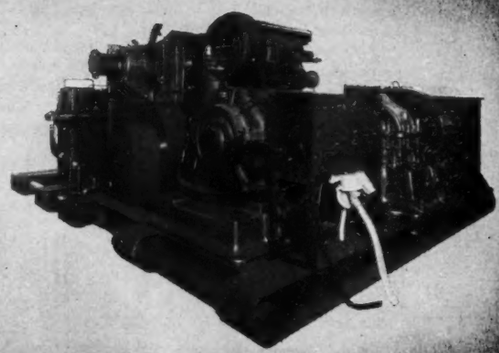
Drawworks Drive Unit showing Emsco UBLS-54 Drawworks, Emsco Type "G" Reduction Gear and General Electric Motor and Field Controller.



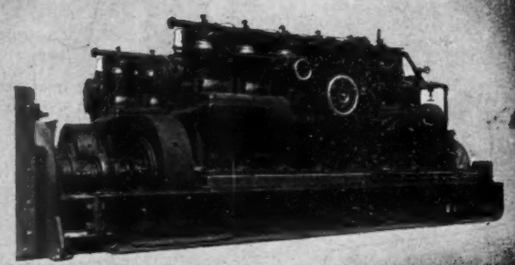
Drawworks Drive Unit. Note compact arrangement. To transport, the unit is dismantled with the drawworks and motor assembly on separate skids.



Gardner-Denver 7¼x20 Pumps—Interpreting years of experience in power steam pump



Drawworks Drive Unit showing convenient electrical cable connections



F-M Model 35-2 Diesel Engines furnish an abundance of reserve power for emergencies.

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CONTINENTAL

INTERNATIONAL NEWS

Suez Canal Traffic Reflects Fluctuating Oil Operations

South to north bound traffic through the Suez Canal last year further reflects the increased rate of oil operations in Iran, Iraq and Bahrein Island. There were 5,705,000 metric tons of petroleum moved from south to north through the Suez in 1937, compared to 4,216,000 metric tons in the preceding year.

Petroleum traffic in a north-south direction declined nearly 50 per cent and totaled only 360,000 metric tons in 1937, a decline of 347,000 tons from the 1936 total. Decline of the north-south traffic is partially due to refinery expansion east of Suez to meet the demand for products in that part of the world.

The south-north petroleum traffic, by far the heaviest in that direction through the canal, consisted of the following quantities (in thousands of metric tons):

Product—	1936	1937	Difference
Fuel oil	1,435	2,203	*768
Gasoline	1,468	1,722	*254
Diesel, gas oil	312	645	*333
Crude	481	616	*135
Kerosene	438	438	
Other products	82	81	†1
Total	4,216	5,705	*1,489

*Increase. †Decrease.

The products listed above, originated from the following points:

	1936	1937	Difference
Abadan	3,578	4,841	*1,263
East Indies	313	393	*80
Bahrein Island	198	377	*179
Suez	115	84	†31
Other	12	10	†2
Total	4,216	5,705	*1,489

*Increase. †Decrease.

The following table shows the origin of petroleum products shipped in the north-south direction:

	1936	1937	Difference
U.S.S.R.	454	176	†278
Italy	101	49	†52
Curacao	59	44	†15
Rumania	39	30	†9
United States	3	15	*12
Other	51	46	†5
Total	707	360	†347

*Increase. †Decrease.

Australians Will Drill Four Tests With Modern Tools

Four modern drilling rigs will shortly be in operation in Australia. The commonwealth government has spent £54,000 for the equipment and they will be leased out to operating companies following lines in the Australian sponsored petroleum search.

One of the rigs is already in operation; another has been ordered from Great Britain and two more are en route from the United States. The Australian government has now spent about £85,000 of the £250,000 voted by parliament to assist in the search for oil. Eight companies have shared in grants amounting to about £31,000. It is announced from Canberra that preliminary action is being taken by the federal ministry to arrange for the general production of benzol motor fuel in Australia. The proposal is that gas works throughout Australia should be equipped to recover and isolate the fuel. At present it is produced only in limited quantity in New South Wales. Tentative estimates indicate that the opportunity already exists to produce between 3,000,000 and 4,000,000 gallons of benzol annually, and that in doing so between 50,000 and 100,000 additional tons of black coal will be used.

Preparatory work at the oil shale works of Newnes, New South Wales, is expected to be commenced by the National Oil Proprietary, Ltd., at an early date. The chairman of directors of this company, who recently returned from a world tour, during which he inspected a type of oil shale retort used in Estonia with satisfactory results, is investigating the possibility of employing these units locally. He says that a vast amount of new equipment will be required to bring the Newnes works into line with the modern plants elsewhere. Equipment required will probably have to be supplied from Estonia and the United States. Arrangements have been made for Estonia and United States shale oil production experts to go to Australia to instruct Australian workers in the technical processes associated with the cracking of shale oil.

Gas Showing in Scotland Not Entirely Unexpected

A showing of gas which tested 2,500,000 feet per day with shut-in pressure of 680 pounds, was encountered last week in D'Arcy Exploration Co.'s test near Edinburgh, Scotland, on what is known as the Cousland structure. The gas volume was tested through a formation tester set at 1,596 feet. On a later test from 1,619-46 feet there was no showing of either gas or oil. The gas showing was not entirely unexpected since it is found present in comparable beds in the Scottish oil shale mines.

Promoting National Refinery in Cuba With Government Help

Creation of a national refining and marketing company in Cuba in which the government would control 25 per cent of the stock is reported as a project of law submitted to the Cuban congress. The proposed law provides for the establishment of a "National Oil Refinery" at Havana. Funds for construction of the refinery and creation of the company would be provided through the issuance of 2,000,000 shares of stock having a par value of 1 peso. Of these, 1,500,000 would be offered to the general public, the remaining 500,000 to constitute the government's participation in the enterprise.

As the sale of shares would require some time, it is proposed that the national treasury advance amounts necessary for immediate construction up to 2,000,000 pesos. As soon as the 1,500,000 shares were sold to the public the refinery would begin to function as an independent cooperative enterprise which would elect a board of directors and officers as desired. Until this was accomplished the refinery would be governed by a board of directors appointed by the president of Cuba with senate approval.

The prices of gasoline and other products of the government-managed refinery would be fixed from time to time by a commission composed of members of the cabinet, according to the report supplied by the department of commerce.

Italian Production Gains While Consumption Lags

An increase of nearly 200,000 metric tons in the Italian production of petroleum derivatives in 1938 is estimated in a report recently obtained by the American consul in Milan. Available information indicates a total production of petroleum derivatives for the year of 1,178,600 metric tons, compared to 981,786 tons produced in 1937. The principal increases are expected in the production of gasoline and fuel oil.

Lower consumption of gasoline and lubricating oil in 1938 is foreseen in the prediction that the anticipated domestic production of gasoline will practically satisfy the Italian demand; that Italian needs for white oils and for bitumen will also be fully met, and that domestic output of lubricating oils should supply 75 per cent of the demand. Fuel oil production will supply only about 30 per cent of the Italian demand.

The estimated consumption by products in terms of metric tons in 1938 and the presumptive consumption for 1937 are shown in the following table:

Products—	Presumptive 1937	Estimated 1938
Gasoline	504,513	360,000
Petroleum	201,875	160,000
Gas oil	(*)	205,000
Fuel oil	(*)	930,000
Lubricating oil	117,375	80,000
White oil	(*)	10,500
Bitumen	85,934	85,000

*Products so designated are grouped with remainder in Italian statistics, preventing a break-down.

Colombian baseball team at El Centro

ENGINEERING and OPERATING

In This Issue

DIESEL ENGINES FINDING WIDER USE AS POWER FOR DRILLING
By Mitchell Tucker ..... *Page 80*

Diesel engines found their first well-drilling application in wildcatting operations, where due to their smaller water requirements, they possessed advantages not inherent in steam rigs. Improvements in the engines have increased their adaptation, and today they are regarded as a reliable source of power in all drilling operations. Various types of drilling to which the diesel is now applied are discussed.

FUEL SYSTEM CHARACTERISTICS: DISCUSSION OF PAWHUSKA TESTS
By W. G. Lovell, J. M. Campbell, and M. J. Mulligan ..... *Page 82*

The Pawhuska road tests conducted in the summer of 1937 to determine the vapor-locking tendencies of 1937 cars revealed quite large vapor losses from the rear tank and carburetor. Here the results of these tests are discussed by a group of automotive engineers and compared with data gained in laboratory vapor loss tests.

PROBLEMS AND DEVELOPMENTS IN MODERN DEEP-WELL PUMPING
By C. J. Coberly ..... *Page 88*

Drilling programs now under way point to the need of more efficient pumping equipment capable of lifting large volumes of fluid from greater depths. In this second half of his article the author describes late-type pumping units which are well adapted to deep-well pumping.

RECENT IMPROVEMENTS IN NATURAL GASOLINE MANUFACTURING
By H. H. Beeson ..... *Page 97*

The manufacture of 27-70 natural gasoline and commercial butane-propane mixtures is being carried on in the East Texas field under conditions which are unusual. The author explains why East Texas gas inherently favors the simultaneous production of these two fractions and describes a plant in which 60,000 gallons of natural and 50,000 gallons of a butane-propane mixture are being made daily.

DEVELOPMENTS IN THE OXYACETYLENE WELDING OF PIPE LINES
By F. C. Hutchinson ..... *Page 103*

Multiflame gas torches and improved welding rods have been perfected in recent months to permit the more rapid and more economical laying of pipe lines. An example of the speed and ease with which this method of welding may be carried out is cited by the author.

ACID TREATING OF GAS WELLS TO INCREASE OIL PRODUCTION
By M. E. Chapman ..... *Page 107*

The treatment of oil wells with acid has become common practice and in recent months a similar treatment has been developed for use on gas wells. The technique employed and the results derived from treatment of wells producing from various type formations are discussed.

PROBLEMS FROM READERS—*By L. G. E. Bignell* ..... *Page 119*

QUESTIONS ON TECHNOLOGY—*By C K. Francis, Ph.D.* ..... *Page 120*

Diesel Engines Use as Power

Fig. 1—Unitized spudder, diesel driven, set down at location to drill the surface hole and run pipe before the rotary is released from offset location. This unit is also suitable for clean-out or pulling operations

By MITCHELL TUCKER

When diesel power was first pioneered for oil well drilling just a few years ago, its application was considered to be limited to wildcat wells where operators were obliged to forego several important advantages then afforded by steam power in order to drill in areas having insufficient and unreliable supplies of fuel or water. The rapid developments which followed the adaptations of diesel engines to rotary and cable tool drilling are all now a matter of record, and today they are regarded as a reliable source of drilling power without limitations. Closely allied with, and perhaps indirectly responsible for, the developments of the engines themselves has been the accompanying improvement in rigs on which they are used, and the fuel with which they operate. Furthermore, the continued educational program among drillers and men in drilling supervisory capacities during the past few years has done much to remove the "mystery" of their operation.

The development of power or mechanical rigs has greatly simplified the adaptability of diesel power to drilling. In fact, the two were developed simultaneously. They were found particularly suitable for areas where the proper fuel or water supply was not adequate. In the West Texas district, where over 450 wells are now drilling, they constitute a large portion of the drilling power. Here in many fields formation gas is highly corrosive due to its sulfur content, and the water supply throughout much of the district is hard and undesirable for boiler feed purpose. Likewise, in the K.M.A. field, diesels are popular for rotary and cable tool work because of the insufficient supply of gas at certain places in the field, and because of the undesirable quality of the water available. Much of the drilling in the Illinois Basin has been with diesels, because of the small gas supply and scarcity of water.

Use of diesel-mechanical rigs also has been extended to every power requirement for any type of drilling, and at present diesels are drilling wells up to depths of at least 7,000 feet, with many projected installations considerably deeper. They are used on unitized or machine spudders and cleaning out or pulling units (Figure 1); on portable and unitized cable tool rigs capable of going 5,000 feet or more (Figure 3); on half- or full-electric rigs driven by diesels; and for all drilling-in purposes (Figure 4); on heavy-duty mechanical rotary rigs driven by diesels; and for all drilling-in purposes (Figure 5). Where a conventional type drawworks drive rigs (as shown in Figure 2) is firmly established. Note the compounding arrangement which permits utmost flexibility of both power units to all requirements.

To complete the power needs on a drilling rig, complete diesel operated utility units are also available including electrical generator, water pump, air compressor, etc. The majority of these auxiliary units are mounted on tubular skids used as compressed air tanks for starting of engines and other incidental purposes around the rig.

The four improvements which the diesel-mechanical rigs have made in their development for suitability as oil well drilling units are: Flexibility and acceleration while operating under all ordinary and emergency conditions; (2) dependability and stamina over long operating periods; (3) economy of operation and maintenance, and (4) portability. Here again the close unity between the design of the power source and the mechanical rig has been necessary to achieve these desirable ends.

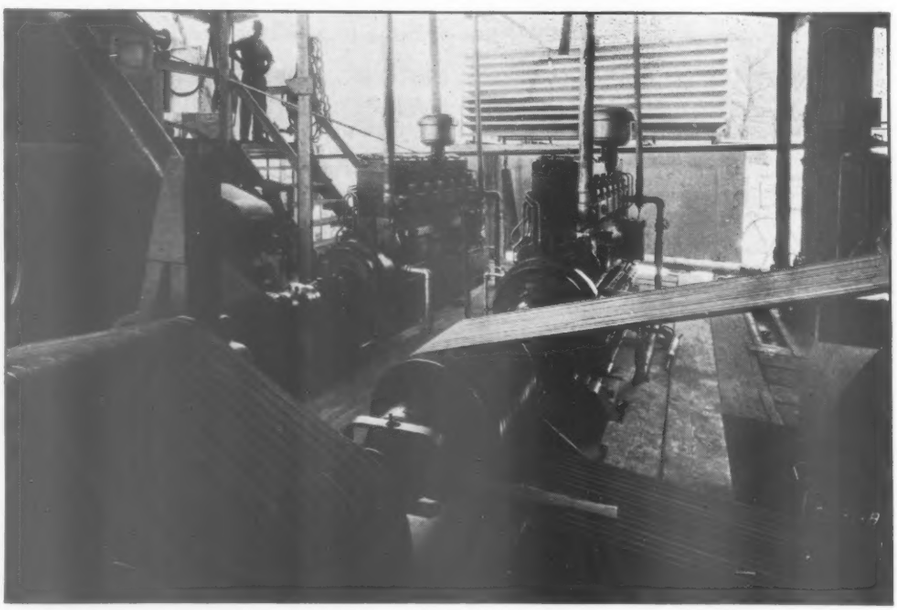


Fig. 2—Diesel-powered, V-belt driven rotary rig using a conventional type drawworks. The compounding arrangements permit utmost flexibility of both units to all requirements

There are two peak demands in any rotary drilling rig operation: that power required to operate the mud pump and that required to pull pipe out of the hole at any time and from any anticipated depth. An efficient rig design must meet these peak demands.

Careful study of the demands of the mud pump for horsepower has assisted in the selection of the most economical engine sizes. Further studies of slush-pump liner sizes, pressures, rates, and discharge volumes have resulted in lower horsepower demands upon the engine, more feet per rock bit, longer tool-joint and drill-pipe life, and longer life of liners and hose. In North, Central or West Texas drilling, one 6¾ to 7¼-inch liner capacity, 14-inch stroke, power mud pump is normally used. Two are sometimes set and connected in compound, but seldom used as such. A normal flushing volume in rotary holes is considered to be about 50 gallons per minute for each inch diameter of hole, and at this rate the requirements while drilling a 9-inch hole should be about 450 gallons per minute.

Required pressure increases as the well goes deeper, and it is either necessary to specify engines large enough to handle the added demand or change pump liners at least once during the drilling of the well. With the 7¼-inch pump, the power end is recommended to operate with about 500 to 600 pounds pressure at 50 r.p.m. (requiring about 200 brake-horsepower input) in order to deliver a flushing volume of from 450 to 500 gallons per minute. Much in excess of that amount will result in overload both upon pump and engine. If the engine is pulled down to meet this condition its delivered horsepower is reduced, resulting in excessive heating and wear on the engine. However, by reducing the liner size at around 2,500 to 3,000 feet to, say 6½ inch, the engine can be kept at its normal rated speed, maintain full horsepower, and also carry around 700 pounds pressure without overloading the power end of the pump.

Knowing the hole size to be drilled and the anticipated depth, a proper horsepower diesel rig can be selected. The requirement for the mud circulating system is usually met with the one engine, and the other for driving the rotary table is usually of the same size for the sake of flexibility. By proper transmission arrangements which permit operating in compound (or in tadem) the other power demands while drilling can be met. Under normal drilling conditions, one engine drives the

Finding Wider for Drilling

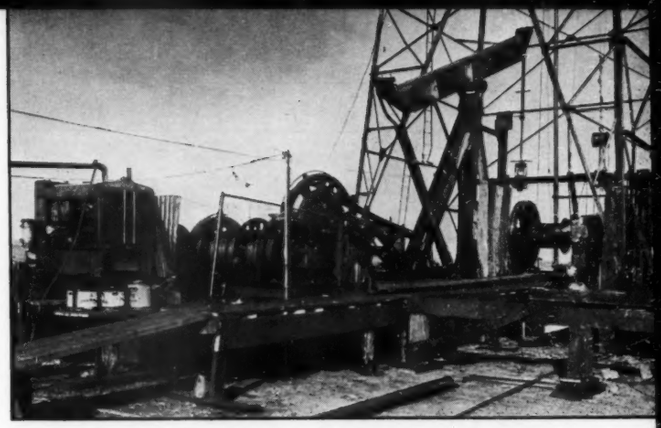


Fig. 3—Portable, unitized cable-tool rig with one diesel engine, capable of going 5,000 feet or more

rotary table and the other the mud pump. However, it is possible to compound two well-balanced engines together and utilize the 50 to 70-horsepower demand at the rotary table, and the remaining available horsepower on the pump. This is often done in such fields as K.M.A., where very large flushing volumes have been found beneficial in rapid drilling. The principal limitation upon this practice is, of course, that it is sometimes not possible to obtain suitable rotary-table speeds if both engines are compounded into the pump. Ratios in the transmission should be such that one engine still has sufficient power to pull the heaviest anticipated pipe out of the hole at the maximum rated depth of the drawworks.

The torque and accelerating ability of the engines, together with the flexible control of power through the transmission, provides the high degree of flexibility and acceleration so necessary in a satisfactory drilling rig.

All conceivable variations should be permitted in the application of power from the normal situation, where one engine drives the table and the other the pump. Through any of the many designs whereby the combined horsepower of the two engines are directed into a transmission, the advantages of compound are afforded. By such an arrangement both engines can be hooked into the drawworks if emergency requires; both onto the pump; or both on the pump and drawworks at the same time; or either engine may drive both pump and drawworks. During any of these operations there must be available power, and transmission facilities, to also run the rotary table if desired.

The flexibility and acceleration requirement enters largely into the handling of the drawworks and hoisting equipment while handling drill pipe or casing. The driller should be able to lift up and pull pipe out of the hole under any emergency circumstances with one engine. Size of the engine and ratios in the transmission combine to make this point of flexibility possible. Sufficient reserve power is then maintained for circulating at the same time, if necessary in case of stuck pipe, etc. The economical design of such rigs, of course, is predicated upon the assumption that sufficient lines are strung for each operation.

In this same operation, as well as others, the factor of engine acceleration is particularly important. In order for the mechanical rig to operate satisfactorily, the engine must pick up rapidly from idle speed to full speed when the occasion demands. The usual number of speeds provided in the transmission assists in this acceleration, but the torque and speed range must be supplied from the power source.

With the modern diesel, the r.p.m. range of from 380-400 at idle speed to 800-850 at full speed, is quickly achieved. Because of the high torque and consequent lugging characteristic at low speeds, a long string of drill pipe or casing can be picked up and pulled with rapid acceleration between stands. It is particularly important to note that the amount of diesel engine torque exhibits very little variation between the speed range of 400 to 800 r.p.m. On one series of experiments it was observed that the highest torque (1,550 foot pounds) was afforded at about 600 r.p.m., while the observed torque near idle speed of 400 r.p.m. was 1,500 foot pounds, and at high speed approximately the same. The physical property of "torque" is what the driller usually calls "horsepower," or that lugging ability to get out of the hole fast. This slight variation in torque or lugging quality between idle and full speed has made the diesel engine readily adaptable to the power requirements in rotary drilling.

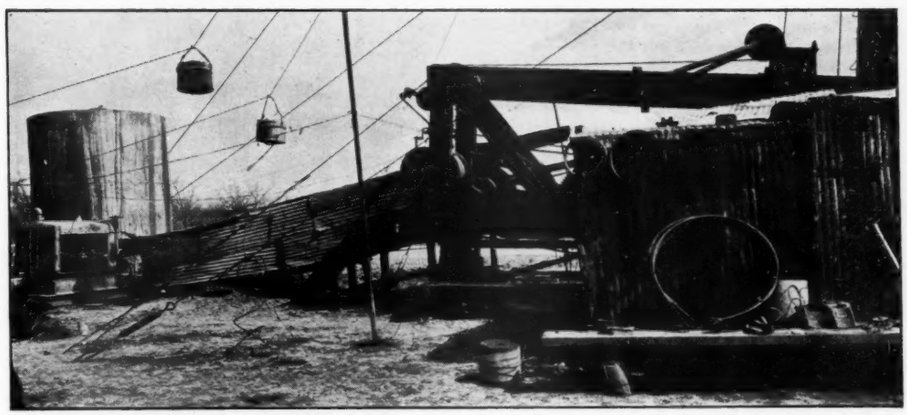
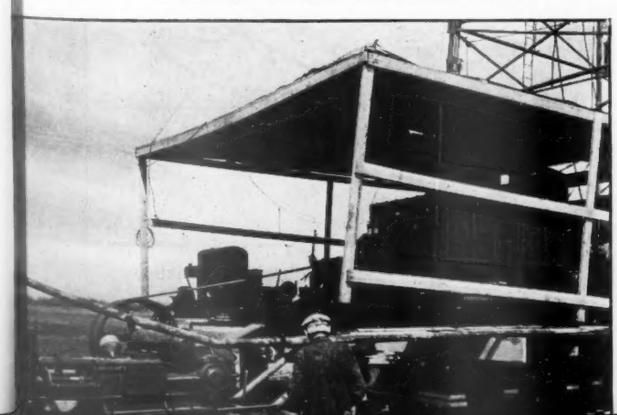


Fig. 4—Diesel-operated cable-tool spudder at a drilling-in well in the K.M.A. field

Fig. 5—Mechanical-diesel rotary rig as seen rigging up in the Avoca field, West Central Texas



Much of the stamina exhibited by diesel engines in pipe line and other stationary work has been preserved in the lighter engines used in drilling. Dependability and stamina are, of course, functions of design and materials of construction. Metallurgical improvements have played a large part in this direction, particularly in the metal used for crankshafts and bearings. Crankshaft sizes have been increased considerably in order to withstand longer operating periods. In the case of the 225-horsepower engine, increases of from 4-4¼ to 5-5¼ inches have been made in crankshaft size, with accompanying improvements in the metal used. This, in turn, permits increased bearing surfaces. Recent developments in bearing metals, and methods for hardening them, have also contributed to increased dependability and stamina in the diesel drilling engine.

Another very important point in achieving these desirable qualities has been in the improved design of the fuel system. With even injection rates and volumes, more continuous and satisfactory operation is assured.

In addition to the economies of operation afforded by quicker tearing-down and rigging-up time, and cheaper transportation costs, several other savings in actual operation are well established for the diesel drilling engine. In areas where water must be purchased or treated, substantial savings are possible, as only about 10 per cent of the water required for steam drilling is necessary for diesels. Diesel fuel is now made readily available by companies that maintain delivery trucks in most fields where they are being used. Fuel costs for different types of power differ from field to field, of course, but diesel oils are now closely comparable with others per horsepower hour, where fuel must be purchased. Labor savings are sometimes afforded by quicker drilling, reduction of shutdown time, portability, and simplicity of operation.

One large item of maintenance cost for early diesels was always that of service calls, often necessitated by inexperienced operators. This condition is now largely corrected due to the persistent program of diesel education among drillers and crews. With stamina and dependability built into the engines, low maintenance costs logically follow. One outstanding performance record for 11 months of continuous drilling of 4,000-foot holes shows a total maintenance cost of $44.

The evolution of the diesel from its original bulky size and slow speed to the present stage of easy portability and medium to high speeds has

(Continued on Page 84)

Fuel System Characteristics

Results of Pawhuska Road Tests as Viewed by Automotive Engineers

By W. G. LOVELL, J. M. CAMPBELL and M. J. MULLIGAN
Research Laboratories, General Motors Corp.*

We have been very much interested in these papers on the technical and economic aspects of fuels of high volatility in present automobiles. Certainly it is to the advantage of all to make the greatest possible economic use of fuels of high volatility, and the type of petroleum engineering work represented by these papers is essential to progress in this respect.

By way of discussion of these papers from the technical standpoint, we would like to describe a laboratory test which has been helpful to us in thinking about the vapor lock problem. For some years, we have used a simple piece of laboratory apparatus for measuring the volume of vapor which is given off by various gasolines at atmospheric temperature under equilibrium conditions. We thus get a direct experimental measure of the maximum amount of vapor which a fuel will evolve at a given temperature, and this has seemed to be directly related to the incidence of vapor lock and to gasoline losses. This apparatus has been described previously in the literature[1], but we would like to call it to your attention again at this time. It is, of course, not a general method of test, but simply a research tool at the present time.

One of the first forms of apparatus for the direct measurement of vapor evolution of gasolines was described by G. G. Brown in 1930[2]. This apparatus was designed to give a direct measure of the vapor evolved from a sample of gasoline of known volume. A simplification of this same type of apparatus was described by Francis in 1932[3]. The apparatus which we have used is somewhat similar, and is shown in Figure 1 diagramatically.

The apparatus consists essentially of a 100 cc. glass burette, calibrated to 0.2 cc. and provided with a motor-driven stirrer extending throughout its length. This burette is filled with mercury and connected to the leveling bulb. The burette is provided with a three-way stop cock at the upper end, which enables liquid samples to be metered into it from a 5 cc. burette immersed in an ice bath.

*Presented at annual meeting of the National Gasoline Association of America, Tulsa, May 11-13, 1938.

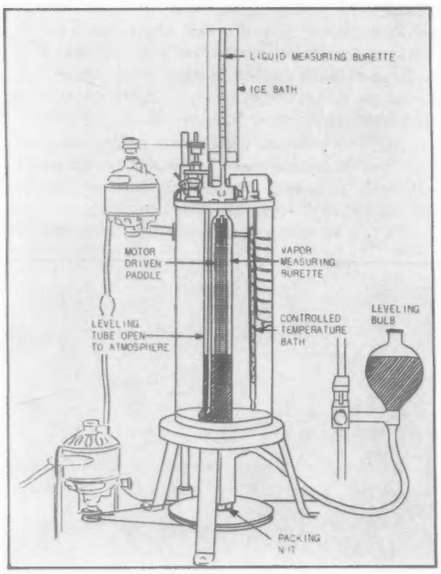


Fig. 1—Schematic diagram of apparatus

In operating this apparatus, the samples of gasoline are cooled and drawn into the measuring burette over dry mercury. The samples are introduced as received; that is to say, they are not dried nor is any attempt made to saturate them with water or air. It is believed that this method represents approximately the conditions actually existing in the fuel system. Particular precautions are necessary to insure equilibrium vaporization, and for this reason the apparatus is provided with a motor-driven stirring mechanism for agitating both the liquid and the gas contained in the measuring burette. At each temperature at which measurements are made, the pressure of vapor in the burette is brought to atmospheric by means of the leveling bulb. From the vapor volumes measured at various temperatures, and at atmospheric pressure, a curve of the volume of gas evolved per unit volume of gasoline or the vapor-to-liquid ratio against temperature could be readily made. A photograph of the apparatus as used is shown in Figure 4.

Some typical data obtained with this apparatus are shown in Figure 2. We have shown there data obtained on four gasolines, labeled with their respective Reid vapor pressures. These gasolines were chosen to represent a variety of volatility characteristics as indicated by their distillation data shown in Figure 3. Such data on vapor evolved at various temperatures have been helpful to us in a first instance in investigating vapor lock. For instance, if we use the 11-pound gasoline and find that it will vapor lock in a car when, let us say, the carburetor fuel is at a temperature of 113° F., we would think that the vapor tolerance of that car was about five volumes of gas per unit volume of gasoline, because that is the amount of vapor that fuel will evolve at that temperature under equilibrium conditions; and we have some reason to believe that the car conditions are not too far from equilibrium. Or, if we had curves for a large number of gasolines and knew the vapor tolerance of a car, we could predict with a fair degree of accuracy what vapor locking temperatures might be expected. In other words, we have found this type of laboratory data to aid in our thinking and to form a good basis for extrapolation and interpolation of data. It is quite simple, because vapor lock in a car is due to too much vapor evolved from the gasoline; we measure directly and conveniently how much vapor is evolved for different gasolines and temperatures.

Another interesting thing about the chart, Figure 2, is that it is not limited to conventional gasolines. As may be seen from the data on these four gasolines, there is not necessarily a very exact correlation between vapor pressure and vapor evolved. In fact, two of the curves cross, and situations arise where a gasoline of lower Reid vapor pressure may evolve more vapor at a fixed temperature than another fuel of higher vapor pressure. Such a gasoline might be expected to have more tendency to vapor lock than the other fuel. Such a situation we have demonstrated experimentally in cars.

In such considerations may be the explanation of the conditions mentioned in the paper today in which it is stated the vapor-lock results, independently determined, will be virtually meaningless unless the test fuels used in the separate investigations are the same or nearly so. This is probably true to a degree when the fuel characteristics are measured in terms of

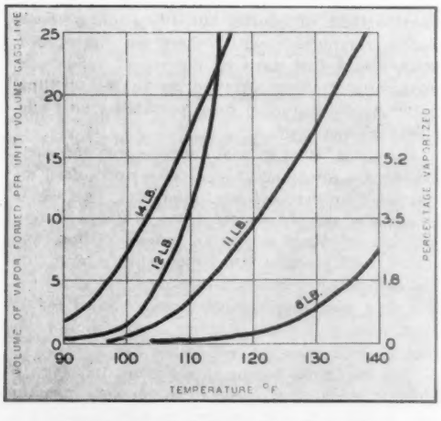


Fig. 2—Vapor-forming tendencies

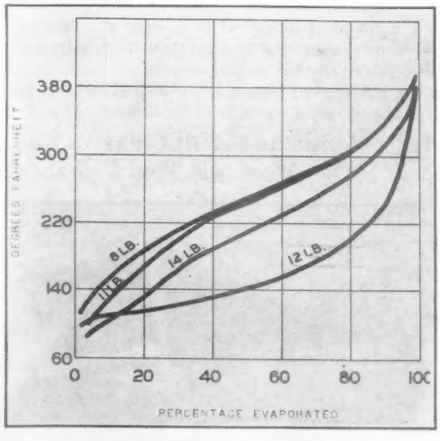


Fig. 3—Distillation characteristics

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Reid vapor pressure. Such a difficulty, however, disappears when we consider simply the measured amount of vapor evolved from the fuel, since that is a characteristic of the fuel that directly affects the automobile fuel system.

Another interesting feature of this chart is that, by assuming the vapor evolved to be butane, we can compute the amount of fuel evaporated from the volume of gas evolved. Such simple computations have been made and put on the right-hand side of the chart. Thus, a vapor volume of 5 corresponds to 1.8 per cent (by volume) of the liquid evaporated.

Computing Fuel Evaporated

Now the interesting thing about this is that, in order to get high percentages evaporated, we have to have a larger amount of vapor evolved. In other words, a high fuel loss due to evaporation means a lot of vapor. With most cars, high fuel loss and vapor lock go together, and we cannot get high losses from the carburetor without considering danger of vapor lock. We have made a number of road tests and have found that this is so; the observed losses from the carburetor seems to agree with those estimated from these curves and the observed temperatures. And they cannot get very high or the car will not run.

The vapor losses from the rear tank, which, according to the Pawhuska tests, are quite large and are about half of the total losses, represent a condition which we cannot explain. We have mentally by connecting a condenser cooled in solid carbon dioxide to the vent, but we have attempted to measure gasoline tank losses experi-been unable to find losses nearly as great as those from the carburetor, and have only observed insignificant amounts of loss when there was no vapor lock. We have thought that this was reasonable since the tank temperatures are usually relatively low. In fact, the data of the Pawhuska tests on seven cars show tank temperature rises above atmospheric of only from 1° to 9° F. with an average of only 5° F. Reference to the chart of vapor evolved (Figure 3) indicates that even with the 11-pound gasoline temperatures of 105° F. or 5° F. above a 100° F. atmospheric temperature, we should expect a loss of only 0.6 per cent. It does not seem as if the fuel could be boiling out of the rear tank.

In some other tests with which we are familiar, losses in vapor pressure of the gasoline in the rear tank have been from 0.3 to 0.4 of a pound for 10- to 11-pound gasolines operated for 60 to 80 miles with tank temperatures running as high as 105° F. Assuming that 1 per cent butane is equivalent to 0.8 of a pound in Reid vapor pressure, such losses in vapor pressure as we have observed in actual operation amount to only 0.4 to 0.5 of 1 per cent.

We hope, in this connection, that the final publication of these road test data will give the density data and the correlations between losses and changes in gravity, in order that an attempt may be made to find out the causes of the apparent discrepancies. Notation might also be made in such data of whether the float bowl of the carburetor was vented to the air or to the carburetor mixing chamber, as is done on some cars, because in the latter case losses as revealed by density measurements would not necessarily represent actual loss since the vapor goes to the engine and is burned.

The causes of discrepancies seem to us important since the losses computed from the Pawhuska test seem to come in such large measure from the rear tank. The temperatures of only 5° F. above atmospheric on the average seem low, and it does not seem that the fuel will boil; so if the fuel gets out, it must be in some other way perhaps not necessarily connected with volatility. In as much as the computations of economic losses in fuel and octane number are based on these figures, it is something about which we ought to be quite certain.

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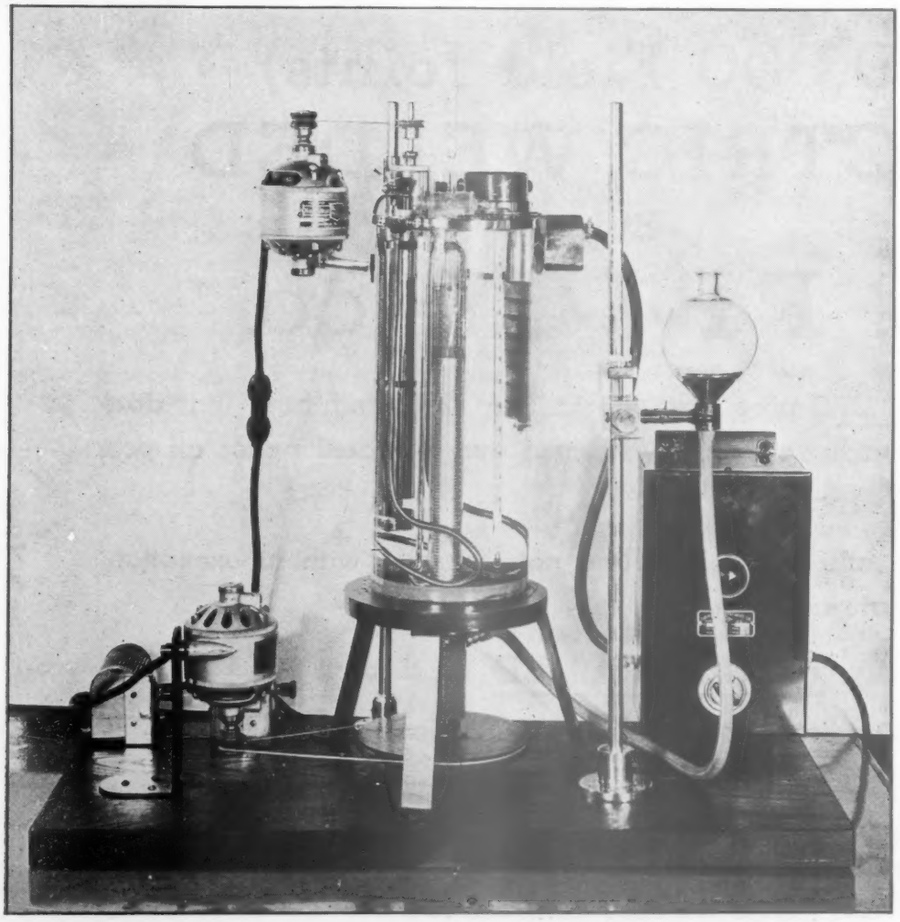

Fig. 4—Arrangement of laboratory motor fuel testing equipment

DIESEL ENGINES

(Continued from Page 81)

contributed largely to its popular scope of usuage today. The average weight of a modern 225-horsepower diesel is about 11,000 to 13,000 pounds each, equipped as a complete power unit including radiator. The actual weight per horsepower is far less than the earlier type diesels, or certain of the present forms of drilling power.

When moving from one location to another, the entire power generating unit for the portable rigs can be moved in one load, together with other smaller units of equipment, fuel tank, etc. The two engines are always mounted on steel skids for the sake of rigidity and portability. The drawworks proper and transmission equipment are usually included in one unit, and mounted on separate skids. The two can be joined together with connecting beams during operation if desired.

Tearing-down and rigging-up time is materially reduced when using this type of rig. The entire unit can be ready for movement by removing belts, chains, and a few retaining bolts on the foundation blocks. Only a few hours are required to tear down, and little if any more time is required before actual drilling operations can begin after reaching new location. The light weight, and small amount of vibration permits the use of wooden sills for substructures in the majority of cases, in contrast to the large concrete block foundations required for the early type diesels.

Petroleum Industry Has Fewer Disabling Accidents in 1937

The disabling-injury experience of the petroleum industry in 1937 showed marked improvement over 1936, according to a report just issued by the department of accident prevention, American Petroleum Institute. The figure for frequency of injury remained practically the same; but the frequency of fatality declined 12 per cent, and the severity of injury declined 11.6 per cent. The petroleum industry should be congratulated on this fine showing, W. G. King, director of American Optical Co.'s industrial safety division, stated here today, as it indicates that accident prevention programs are slowly but surely having an effect in regard to the elimination of accidents.

He remarked, however, that an examination of the injury statistics reveals the disturbing fact that 20 eye injuries resulted in the loss of 13 eyes and impairment of vision in the remaining seven. In addition, several workmen were completely blinded.

Asserting that these twenty-odd eyes could have been saved by the wearing of eye protective equipment, Mr. King declared this eye accident problem could be attacked in three ways: (1) By providing goggles, helmets, face shields and screens for all industrial operations where hazards are present; (2) eliminating hazards by revising processes of work, by redesigning tools and machines, and by rearrangement of machines and other plant equipment; and (3) by rules of work, by supervision, training and education in safe practices of workmen and foremen.

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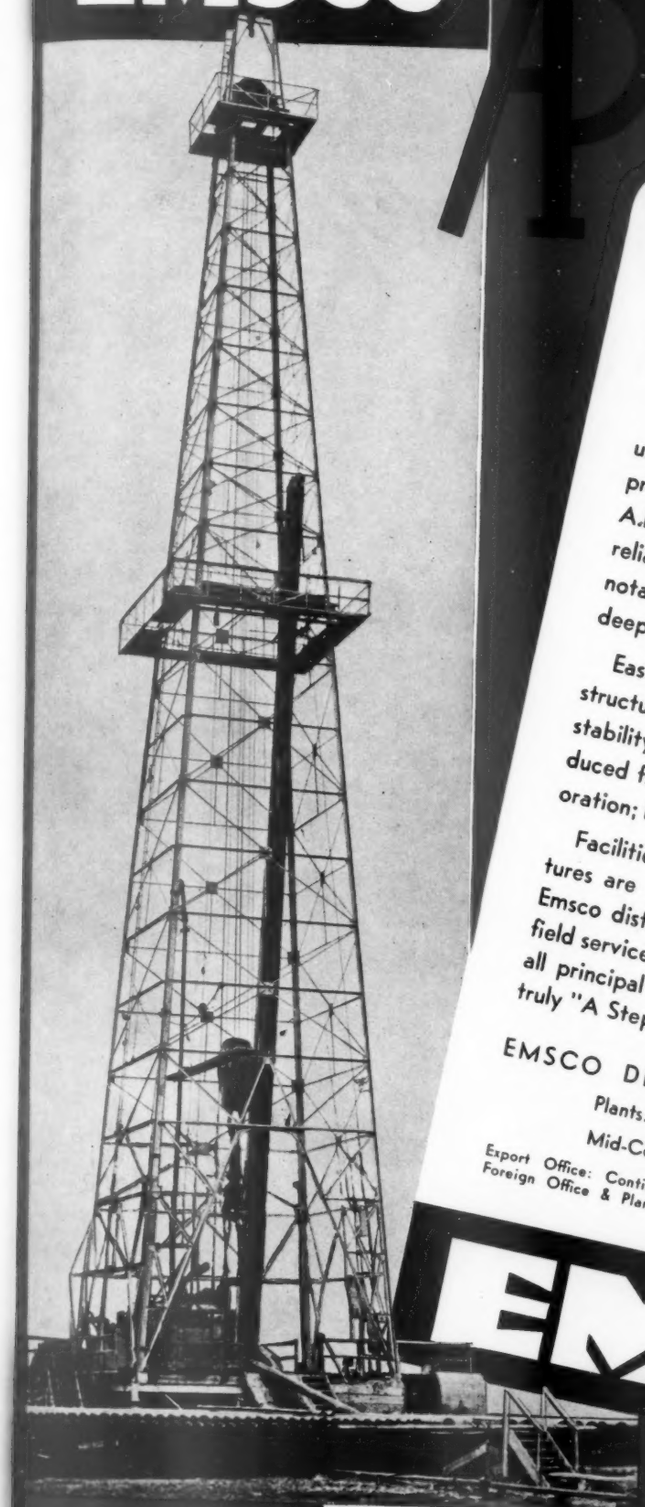

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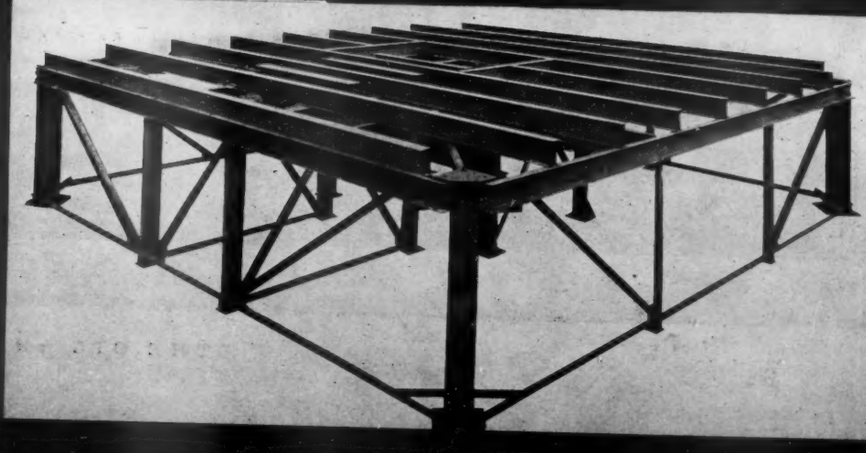

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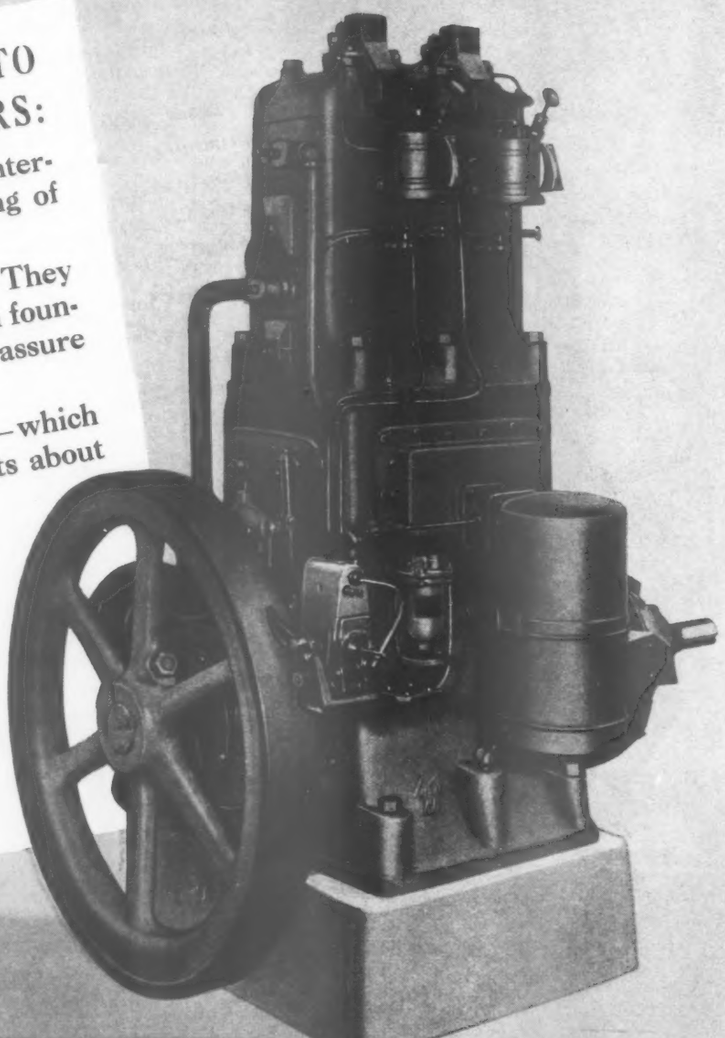

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105 YEARS OF KEEPING PACE WITH INDUSTRY

Progress in METALS

By W. L. NELSON

Fabrication With Tantalum

Petroleum refiners are being confronted more and more often with the problems of handling high corrosive chemicals such as chlorine, hydrochloric acid, alkalies and chlorinated derivatives. In the handling of such materials, the metal tantalum may be important in the successful development of new processes.

In the design of equipment for severe corrosive conditions such as those imposed by acids and chemicals, engineers can seldom afford to use truly resistant materials except certain cast irons. Thus, chemical equipment is often bulky in design because such materials as earthenware, glass, rubber, or brittle cast iron, must be employed. For this reason the design of equipment in thin sections out of expensive and strong materials has not been completely explored.

Some interesting developments in this direction are evident in the bulletins of the Fansteel Metallurgical Corp. which illustrate the utilization of tantalum for corrosion resistant services. The metal tantalum is highly resistant to most inorganic acids, alkalies and salts. Tantalum has much the same physical properties as steel and hence it can be fabricated in extremely thin sections except for high pressures, because extra thickness is not necessary to care for corrosion. In many equipments, the tantalum parts are ingeniously connected to base-metal parts in such a way that a minimum amount of the expensive tantalum is required.

Metallurgical Terms—

Low-Alloy and High-Alloy Steels

Many different alloy steels are usually possible with a single alloy element and hence to say that a steel is a manganese steel or a nickel steel may mean very little. Nevertheless, writers are forced to be careless in this respect because the casual reader would be confused and exasperated if the author halted too often to give detailed compositions.

As an example, the usual engineer considers that manganese steel is the 11-14 per cent variety that has long been known as Hadfield's steel, whereas of late the name, manganese steel, has also been widely used in referring to steels containing only 1 to 1½ per cent of manganese. This confusion can be alleviated by referring to the first steel as "high-manganese steel" and the second as "low-manganese steel." Of course, there are examples of alloy elements that are used in a whole range of compositions. However, the main alloy steels usually contain either a small amount of alloy element and are generally classified as pearlitic steels; or they contain a relatively large amount of special element and are austenitic steels which have entirely different properties than the low-alloy or pearlitic steels.

Thus, the low-alloy or pearlitic steels are similar in many respects to plain carbon steels. They are usually stronger and harder for an equal ductility, can be hardened by quenching and tempering, and are scarcely more resistant to active corrosion than plain carbon steel. In contrast, the high-alloy or austenitic steels are extremely hard, usually very tough, abrasion resistant, and extremely resistant to corrosion.

As examples, the stainless steels are high-chromium steels (13 per cent and up) and the S. A. E. 5000 steels are low-chromium steels (0.6-1.5 per cent) for machine and structural purposes. The high-manganese (11-14) steels for abrasion resistance and the low-manganese (1-1.5) steels for castings, etc., have already been mentioned. Likewise the low-nickel structural steels contain 2 to 5 per cent of nickel, whereas the high-nickel steels (28-40) are used for a low coefficient of expansion or for corrosion resistance. In addition to the simple ternary steels, there are many steels that contain several alloy elements, and the only clear way to name these steels is to use the names of the several alloy elements in the order of the quantity of each that is present, as low-nickel chromium steel or high-chromium nickel steel, etc.

Detection of Fatigue Cracks

Abstract—Taber de Forest, "Detection of Fatigue Cracks," read before the California Natural Gasoline Association at Los Angeles, March 10, 1938.

"No one has ever witnessed the birth of a fatigue crack, for it was not there yesterday and it is here today, but we do have a fair idea of its history as it progresses, growing larger until failure occurs."

Almost all of the factors that are said to cause fatigue cracks may be attributed in one way or another to a notch effect or stress concentration. Sharp corners in machine parts are great offenders although nearly unavoidable irregularities in the surface of the metal, flaws in the original ingot material, or cracks produced by improper heat treatment or grinding may also be responsible. Cracks may also be started by careless handling such as the use of too long wrenches which starts cracks between the threads that soon progress into the main body of the material; or by misalignment of shafts or bearings.

Two methods have been widely used in the past for the detection of fatigue cracks. The first or "kerosene and white wash" method serves fairly well except that it cannot be used for those minute cracks that are not penetrated by kerosene, and the second or "etching" method may be destructive of the surface and is particularly unsuitable if the surface must be subsequently polished. The Magnaflux method, as promoted by Mr. de Forest about eight years ago, consists essentially of magnetizing the steel part so that the lines of magnetic force or flux are in a direction perpendicular to the probable direction of the crack and then applying finely divided iron to the surface. A portion of the iron will tenaciously adhere in the leakage field caused by the crack, in an unmistakable manner. The method is now used in many industries such as railroad shops, engine manufacturers, and oil-tool manufacturing companies, and is supervised by the Magnaflux Corp.

One method is to wrap the part in a heavy cable carrying a high amperage current. This magnetizes the steel part, causing a south pole to appear at one end and and a north pole at the other and thus cracks that are at right angles to the major or long axis of the piece may be detected. This method is particularly useful for long pieces such as shafts, axles and rods, and perhaps might be useful for sucker-rods. After magnetizing the part, iron powder is sprinkled over the surface, using a light colored powder for dark colored pieces or a black powder suspended in oil for light colored pieces.

Centrifugally-Cast Pump Liners

The application of centrifugal force during the casting of certain symmetrically shaped articles such as pipe or tubing is becoming more and more common. Under such conditions the impurities such as slag, dirt and gas are spun to the inside of the tube where they can be easily removed by machining. The resulting iron is exceptionally dense and fine grained, and in fact has a fracture similar to the silky fracture of tool steel.

According to E. F. Green of the Axelson Manufacturing Co., the new super-cast liners of this company, which are made by centrifugally casting an electric furnace alloy cast iron, is far superior to the hardened iron liners heretofore available. The new liners are also hardened by quenching and tempering. The following tabulation indicates the approximate percentage improvement that is exhibited by the super-cast liner as compared with the best hardened gray iron liners: Strength, 45 per cent; hardness, 20 per cent; toughness, 300 per cent.

Corrosion-Resistant Lines

Vapor lines have long been of all-steel construction because of the mechanical stresses that are induced by sudden changes in temperature. However, plain steel is susceptible to any of the common types of oil corrosion and hence some designers have recently specified Ni-Resist cast iron pipe and materials for such services as low-pressure vapor lines and condenser headers. Alloy irons are far stronger and more resistant to shock than regular gray cast iron and hence the use of alloy irons may become common for low-temperature low-pressure services. Although the cost of Ni-Resist iron is higher than the cost of gray iron, it is far cheaper than corrosion-resistant alloy steel.

Nickel, copper chromium iron castings produced by the Carondlet Foundry of St. Louis, in an electric furnace, are shown in Figure 1. The largest casting shown is 16 feet long, 16 inches in diameter and has a wall thickness of 1 inch.

Fig. 1—Iron castings produced in an electric furnace

Problems of Modern Deep-Well Pumping

By C. J. COBERLY
Kobe, Inc.

In this second half of his article the author describes late-type pumping units as well as other methods of pumping which are well adapted to producing deep wells. The first portion of the paper, which was presented before the spring meeting of the American Society of Mechanical Engineers at Los Angeles, Calif., March 23-25, appeared in the May 12 issue of The Oil and Gas Journal, beginning on page 126. In that part sucker rod pumping limitations were discussed and data presented regarding the conditions which must be fulfilled to lift profitable quantities of fluid from deep wells.

Pumping Units

Developments in pumping units trend to portable floor types capable of carrying heavy loads and with the prime mover mounted directly on the unit. Well servicing is usually done with a portable pulling machine. This permits faster pulling of deep wells and reduces the cost of pumping equipment. Load-carrying capacities of these units are as high as 35,000 pounds. One special unit has been installed having a load capacity of 50,000 pounds. Larger units will no doubt be designed and are essential to the handling of the loads which deep wells and full-tapered rod strings will require.

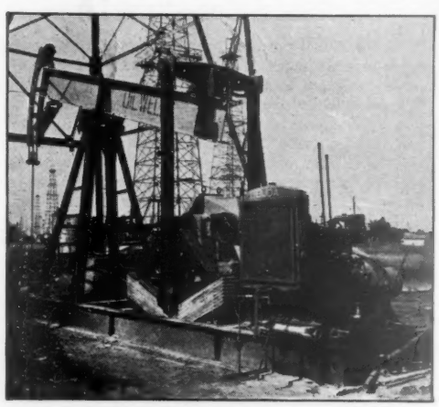


Fig. 16—Heavy-duty unit with double pitman

Specifications

Maximum well load—25,000 pounds
Maximum counterbalance (lead)—560,000 in. pounds
Length of stroke—24, 34, 44, 54, 64 and 74 inches
Strokes per minute (nominal)—20, maximum 28
Nominal horsepower—20 S.P.M.—41.9
Peak torque—20 S.P.M.—207,500 in. pounds
Weight—23,900 pounds

Characteristics and design features of the various pumping units will not be described in detail as this information is available in the various trade journals and manufacturers' literature. Specifications of some of the heavier models are listed as examples of the equipment available for pumping deep wells. The trend in these units is to a long stroke at moderate or slow speed to minimize the dynamic components of the load.

These specifications are taken from the manufacturers' literature. In most instances they show the beam strength as well load or polished rod load. It should be pointed out that this does not necessarily represent the polished rod load which the unit is capable of exerting at normal speed and maximum stroke without exceeding the peak torque rating of the reduction gear. A.P.I. standards No. 11-E give specifications for rating of pumping machines, which includes the rating of reduction gears. A.P.I. standards No. 4 establish the safe working load of walking-beams.

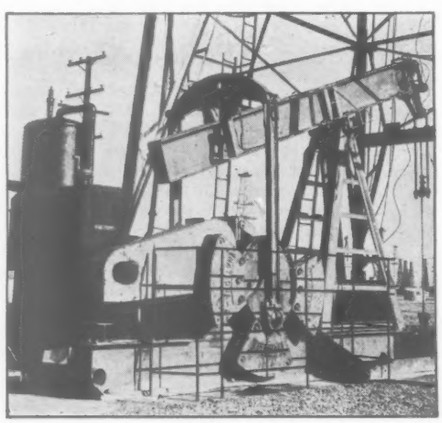


Fig. 17—Floor type unit with double pitman and double-crank counterbalance

Specifications

Maximum well load—25,000 pounds
Maximum counterbalance—17,000 pounds
Length of stroke—27, 38, 49, 61 and 72 inches
Strokes per minute (nominal)—20
Nominal horsepower—20 S.P.M.—single reduction 48
Nominal horsepower—20 S.P.M.—double reduction 38
Peak torque—20 S.P.M.—single reduction 238,000 in. lbs.
Peak torque—20 S.P.M.—double reduction 200,000 in. lbs.

Oil Well Twin Crank.—This is a medium stroke length heavy-duty unit with double pitman, and double-crank type counterbalance. This unit with engine drive is shown in Figure 16.

National Unit Pumper.—This is a floor type unit with double pitman, double-crank counterbalance and additional beam balance if desired. Figure 17 shows a photograph of this unit.

Lacy Air Balanced Unit.—Compressed air is the medium used in this unit for counterbalancing the load. The air system consists of a 12-inch diameter balance cylinder, attached to the beam directly back of the horsehead, which connects with an air reservoir mounted under the reduction gear. (See Figure 18.) A piston is provided for the balance cylinder, having a hollow piston rod which forms the passage from the cylinder to the reservoir. An air compressor is operated by the beam to supply air to the system. The air pressure is controlled by a pressure regulator. By adjusting this regulator the counterbalance pressure can be set at any desired value while the unit is in operation. The optimum counterbalance can therefore be quickly and easily obtained by a simple manual adjustment.

Parkersburg Long Stroke.—This is an adaptation of a straight line motion linkage to a pumping unit. This permits the construction of a long stroke unit with the polished rod grip pivoted on the nose of the beam. Stroke lengths up to 11 feet are possible with a direct vertical pull on the rod. Counterbalance weights are attached directly to the beam. Figure 19 shows an installation of this type.

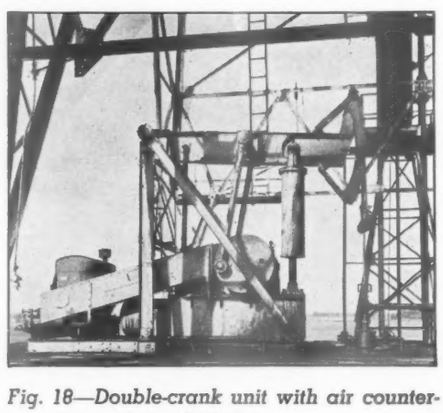


Fig. 18—Double-crank unit with air counterbalance

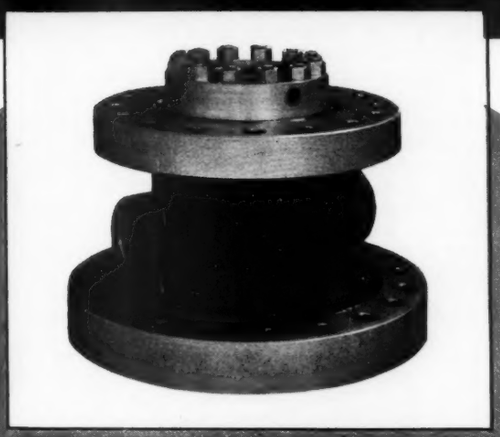
Specifications

Maximum well load—34,100 pounds
Maximum counterbalance—21,700 pounds
Length of stroke—42, 50, 58 and 66 inches
Strokes per minute (nominal)—20
Peak torque of reduction gear—260,000 in. lbs.
Weight—19,000 pounds

Parkersburg Hydronumatic Unit.—This unit is the same as the long stroke unit except for the means of counterbalancing. In this case a hydraulic cylinder is attached to the beam about midway between the pitman bearing and the polished rod hanger. An air receiver is built around the cylinder and is pivoted at the bottom to accommodate the oscillation of the beam. The hydraulic cylinder is open at the lower end and communicates with

EH-1 — 4000 LB. TEST
6000 LB. TEST

With the EH-1 Casing Head, the next smaller casing head or the tubing head is supported on a nipple attached to the mandrel coupling.



EH-4 — 6000 LB. TEST

For use in an assembly of stacked casing heads on wells having three or more strings of casing.

JH-3 — 6000 LB. TEST

Same as JH-1 except for the flange at upper end of the body.

KH-1 — 4000 LB. TEST

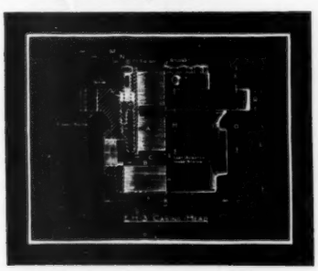
For medium pressure service. One large packing packs off area between body and inner string. Packing is confined between split packing plates. Packing gland will pass over casing couplings, making it unnecessary to remove coupling to install packing.

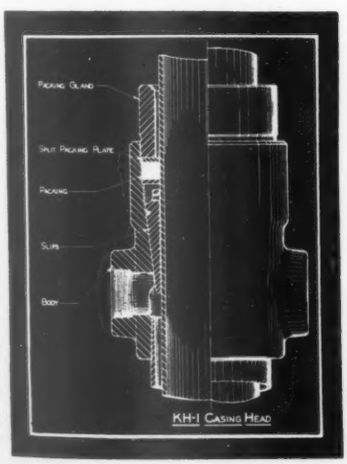
EH-3 — 6000 LB. TEST

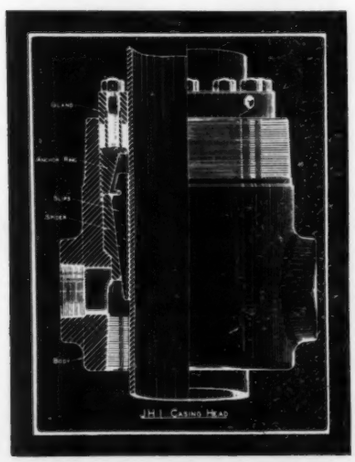
Flange at upper end is of proposed A. P. I. Standard dimensions. This flange permits attaching blow-out preventer or flanged tubing or casing head.

JH-1 — 6000 LB. TEST

Designed to support and pack off long strings of casing. Patented packing arrangement makes this head suitable for high pressure service.







NATIONAL

THE NATIONAL SUPPLY COMPANY

EXECUTIVE OFFICES: PITTSBURGH, PA.
DIVISION OFFICES: FT. WORTH, TEXAS; TULSA, OKLA.; TORRANCE, CALIF.
GENERAL SALES OFFICE: TOLEDO, OHIO

the receiver. The lower portion of the receiver is filled with oil. Air under suitable pressure is confined over the oil. The air pressure is thus transmitted through the oil to the counterbalance piston in the hydraulic cylinder.

Any desired counterbalance force can be obtained by adjustment of the air pressure while the machine is in operation.

Figure 20 shows a typical hydronumatic unit installation.

Lufkin.—This is a long stroke heavy duty unit adaptable to deep wells. (See Figure 21.)

In addition to the improvements in beam operated sucker rod pumps for pumping deep wells, many new ideas are in process of development both in the form of pumps and gas lift devices. Many of these show promise and are worthy of mention, but for lack of time only those are described which are strictly speaking pumps and which have been in commercial use for sufficient time to establish their value to the deep pumping problem.

Sullivan Pneumatic Pumping System

This method of pumping utilizes a single acting cylinder suspended centrally over the well for actuating the conventional sucker-rod pump.

The complete system consists of a compressor unit, heater and pumphead. The compressor may be a single unit, skid-mounted for individual well operation or may be a central plant for operating any number of wells in a group system. Where high pressure gas is available it may be utilized and discharged into a low pressure system. When compressors are provided a closed circuit is used. The low pressure part of the system is held at a pressure slightly less than that required at the pumping head to balance the rod load. Figure 22 is a schematic drawing showing the operation of this method of pumping. The compressor is single stage and intakes at the above pressure and discharges into the high pressure lines at a pressure slightly higher than that required at the pumphead to lift the rod load plus the fluid load and overcome friction in the system. The intake pressure will be in the order of 150 pounds per square inch and the discharge pressure will be approximately 250 pounds per square inch.

The compression ratio is determined by the ratio of the rod load plus the fluid load plus friction, to the rod load minus friction. This ratio varies with conditions from 1.6 to 2.5. This low compression ratio results in low compression horsepower and high thermal efficiency for the cycle. To make up for leakage from the system the compressor also provides for taking air at atmospheric pressure and compressing it to the intake pressure of the main compressor cylinder.

As a means of further increasing the economies of the system the high pressure air is heated before it is delivered to the pumphead and increased in volume at constant pressure in proportion to the ratio of absolute temperatures at the intake and discharge of the heater. By heating the air from 60° F. to 400° F. the required compressor capacity is reduced 40 per cent. Heating serves the further purpose of avoiding the freezing of certain parts in cold weather due to the expansion of the air as it leaves the pumphead.

The pumphead is provided with controls which permit varying the speed of the upstroke and downstroke independently. Both the length of stroke and the strokes per minute of this unit can be varied over a wide range.

Capacity.—Four sizes are available having load carrying capacity corresponding to a rod stress of 30,000 pounds per square inch in ⅝-, ¾-, ⅞- and 1-inch rods. Table 3 gives the pump sizes and depths for various rod and pump combinations based on fluid level at the pump setting and fluid gravity of 1.0. The pumpheads are designed for much higher pressures than required to carry these loads and therefore considerably more latitude is provided than is shown in this table.

The principle capacity limitation of this method of pumping is imposed by the sucker rod design. This is substantially the same as for beam pumping units with the exceptions that stroke lengths may be conveniently made much longer and dynamic loads are materially reduced. This permits higher average polished rod loads with the same maximum load. Figure 23 is typical dynameter card taken at high speed which clearly shows the uniformity of the rod load on both strokes. A comparison of this card with Figure 11 illustrates the advantage in this regard over the conventional beam pumping unit.

Depth Limitations.—Here again the sucker rod design is the principle limiting factor. Since the unit can carry heavier loads by merely increasing the air pressure or by increasing the cylinder diameter, this method of pumping is particularly adapted to deep wells and heavy rod loads. It is practically unlimited in load carrying capacity and the mass of the moving parts does not need to be materially increased to accomplish this. It should also be pointed out that as the rod load becomes higher the compression ratio on the operating air is reduced. A gain in efficiency therefore results from increased rod load.

Special Features.—The sucker rod string in the pneumatic pumphead system is free at both ends, hence is not constrained to follow any given velocity path. The motivating force on the up stroke and the retarding force on the down stroke

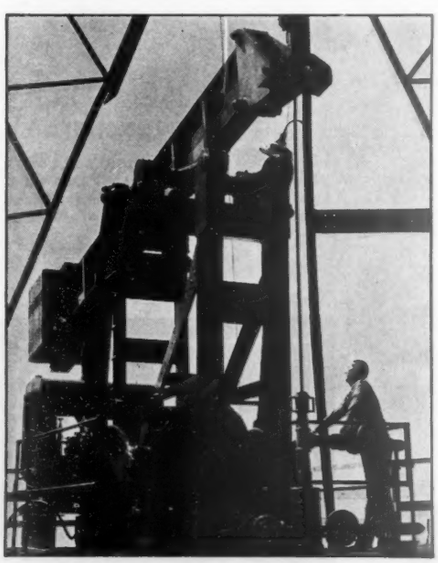


Fig. 19—Long stroke pumping unit with straight line motion

Specifications

Maximum well load—30,000 pounds
Maximum effective counterbalance at polished rod—16,600 pounds
Length of stroke—60, 84, 108 and 132 inches
Strokes per minute— 5, 6, 7, 8, 9, 10, 11,
Horsepower capacity—27, 31.5, 35.5, 39.4, 43.3, 46.3, 49.5.
Strokes per minute— 12, 13, 14, 15
Horsepower capacity—52.5, 55.5, 57.5, 59.5
Approximate weight of unit—32,650 pounds.

Fig. 20—Long stroke "hydronumatic" installation

Specifications

Maximum well load—30,000 pounds
Maximum effective counterbalance at polished rod—18,000 pounds
Length of stroke—72, 96 and 120 inches
Nominal horsepower—9 S.P.M.—39.5; 20 S.P.M.—82.8
Peak torque—9 S.P.M.—434,000 in. lbs.; 20 S.P.M.—409,000 in. lbs.
Weight—28,535 pounds

Fig. 21—Nine-foot stroke, heavy-duty pumping unit

Specifications

Maximum well load—26,700 pounds
Maximum effective counterbalance at polished rod—18,700 pounds
Maximum stroke length—108 inches
Nominal horsepower—81
Peak torque—400,000 in. lbs.

TABLE 3—PUMPING DEPTH WITH VARIOUS ROD AND PUMP COMBINATIONS

Cylinder diam.* / Rod string		5¾-inch	8-inch		10-inch			11-inch		
		⅝	¾ and ⅝	¾	⅝	⅞ and ¾	⅞, ¾ and ⅝	1	1 and ⅞	1, ⅞ and ¾
Plunger size, inches	1¼	5,200	6,600	5,650	6,050	7,000	7,800	6,600	7,600	8,460
	1½	4,500	5,750	5,100	5,550	6,300	6,800	6,100	6,800	7,600
	1¾	3,900	4,950	4,500	5,050	5,650	5,950	5,650	6,200	6,750
	2	3,400	4,250	4,000	4,550	5,000	5,150	5,150	5,650	5,950
	2¼	2,900	3,700	3,550	4,100	4,450	4,450	4,700	5,100	5,300
	2½	2,550	3,200	3,140	3,700	3,900	....	4,300	4,600	4,700
	2¾	2,250	2,800	2,800	3,300	3,500	....	3,900	4,150	....
	3	2,000	....	2,500	3,000	3,150	....	3,600	3,750	....
	3½	1,550	....	2,000	2,450	2,550	....	3,000	3,100	....
	3¾	1,400	....	1,800	2,200	2,300	....	2,750	2,800	....
	4¾	920	....	1,200	1,570	....	....	1,950	....	....

*Strokes are available to 15 feet.

are definitely controlled line pressures fixed at values required for desired operating conditions.

The pull on the rods is substantially constant and hence any variation in rod load from any cause within the well during the cycle is reflected in a change in velocity at the polished rod. Dynamic load stresses are therefore not additive, but rather are smoothed out by this constant force cycle in place of the definite velocity cycle. Since the rods

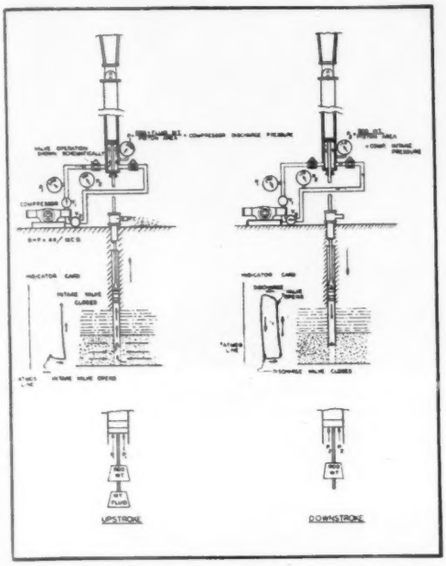


Fig. 22—Schematic illustration of pneumatic pumping system

fall by gravity with a definite retarding force acceleration in excess of gravity on the down stroke is not possible. The practical significance of these points is a definite limited rod stress with no peaks which means an appreciable extension to the usefulness of sucker rods either in the form of greater depths or longer life.

Reda Pump

This is a submerged electric motor and pump located below the well fluid level which eliminates the sucker rods and all moving parts in the well except in the pumping unit. Since electric power can be transmitted economically at moderate voltage for distances equal to the present deepest oil well, it has many advantages for operating "bottom-hole" pumps.

The unit marketed under the above name consists of a multi-stage centrifugal pump direct connected to an electric motor through a "protector" section, the entire assembly being of small diameter so that it may be run in wells having small diameter casing. The unit is suspended on tubing in a manner similar to a working barrel, with a cable extending from the surface to the unit to carry electric power to the motor. Since the motor unit is filled with oil it will function perfectly under any submergence pressure and hence may be operated at any distance below the fluid level in the well. Figure 24 shows the complete unit with cable attached hanging in the derrick preparatory to running into the well.

The motor is of the squirrel-cage induction type operating at 3,600 r.p.m. It is enclosed in a steel housing filled with a light oil having both high dielectric strength and good lubricating properties. The oil also serves to cool the rotor and stator windings. The motor is made in diameters suitable for use in 5½-inch 17-pound; 6⅝-inch 26-pound; and 8⅝-inch 43-pound casings. Motors for the 5½-inch casing range from 1.7 to 45.5 hp.; for 6⅝-inch casing from 5 to 97.5 hp., and for the 8⅝-inch motors up to 200 hp. are available.

It should be noted that due to the effective cooling by the pumped fluid which passes between the motor housing and the well casing these motors have high overload capacity and may be operated near point of pull-out torque without over-heating.

The protector consists of a suitable packing device on the motor shaft around which is a grease chamber containing a spring-backed piston communicating on its lower side to the well pressure. Grease is confined over the piston at a pressure greater than the well pressure by the amount the spring exerts. This grease under pressure is conducted to a spacer ring between sections of special packing. Since this grease is under higher pressure than the well fluid the leakage of well fluid into the motor is avoided and the motor is protected from water and crude oil which would be harmful to the motor windings and bearings.

The pump is a separate assembly which is attached above the protector. It consists of a vertical assembly of centrifugal impellers and diffuser of the required type and diameter to produce the desired volume against the discharge head. The pump assembly is made in diameters substantially the same as the motor. The 5½-inch size uses from 10 to 285 stages and will pump against heads of from 300 to 8,000 feet. The 6⅝-inch size has from 4 to 193 stages for lifts of from 300 to 8,500 feet.

The daily production rates extend up to 1,900, 8,000 and 15,000 bbls. per day in the 5½-inch, 6⅝-inch and 8⅝-inch sizes respectively. At the present time pumps are set as shallow as 375 feet and as deep as 7,300 feet. The smallest daily production is 18 bbls. and the largest is 14,000 bbls. Power is supplied to the motor through a steel armored flexible cable which is oil proof and is not affected by hydrostatic pressure. It is spooled on a special reel and leads are taken off from the center of the reel to connect with the starting and control equipment and to the line transformer.

The unit when operating has only one straight rotating part, with no gears, valves or reciprocating parts and is self-lubricated. Low lifting cost is attributed to the high mechanical efficiency of centrifugal pumps and to the design of this equipment whereby the driving force is directly connected to the pump and is not subject to mechanical loss in the transmission of power as in methods where the drilling force is on top of the ground and carried to the pump by rods or other means.

This pump is readily adapted to automatic control and may be intermitted on any suitable cycle. Underload due to the well pumping off is used as a means of automatic control. Centrifugal pumps

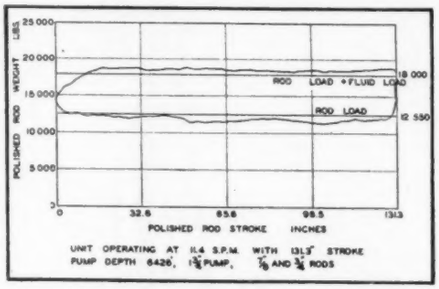


Fig. 23—Typical pneumatic pumphead Dynagraph

are capable of handling sand in considerable quantities. It is stated by the manufacturer that this pump may be used to good advantage for cleaning wells in place of bailing or sand pumping.

From the above description it can be seen that the submerged motor centrifugal pump has a number of unique qualifications which lends itself to the problem of modern deep well pumping.

Kobe Hydraulic Pump

The hydraulic method of operation employed by this pump eliminates the use of sucker rods and substitutes fluid as the power transmitting medium. This power is directly applied below the fluid level in the well by a fluid actuated engine direct-connected to a reciprocating double-acting pump.

Oil is used as the fluid and is normally taken from the well produced, but may be taken from any other convenient source. This oil, after being properly settled, filtered, or otherwise treated to remove the water and any solids which would be detrimental to the equipment, is distributed under high pressure to the well or wells through surface lines. Production tubing is used in the conventional manner and is provided with a shoe and gas anchor at the bottom. The production unit consisting of the combined engine and pump is attached to the lower end of a string of pressure tubing and inserted within the production tubing. The pump seats in the shoe in the production tubing so that the only point of entrance of oil to this tubing is through the pump. The inner tubing conducts the power fluid to the unit, and the annular space between this pressure tubing and the well tubing forms a passage for the return of power fluid combined with the production from the well. The pressure tubing is connected with the high pressure surface lines and the production tubing is connected

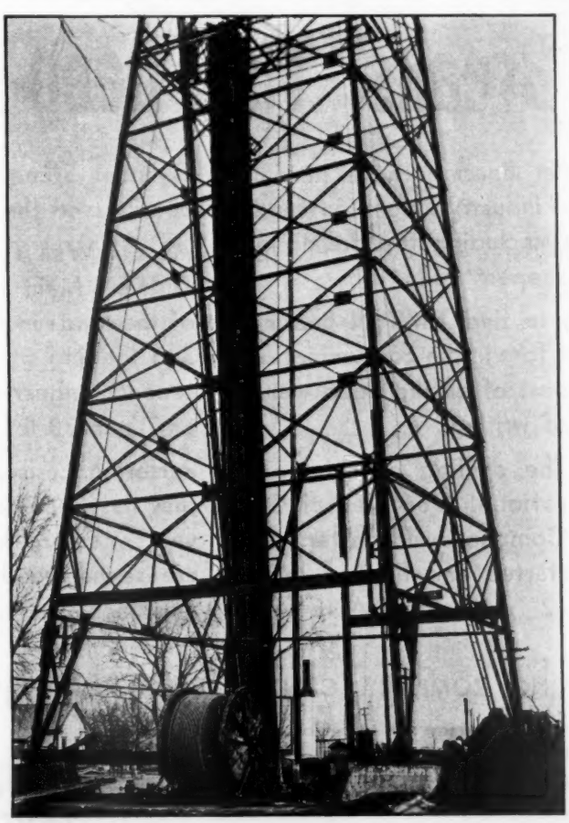
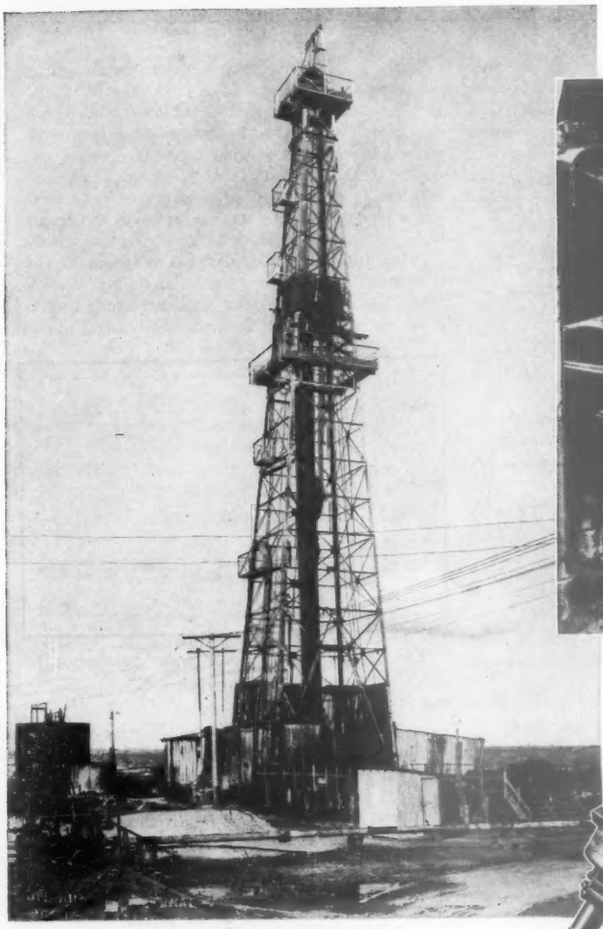
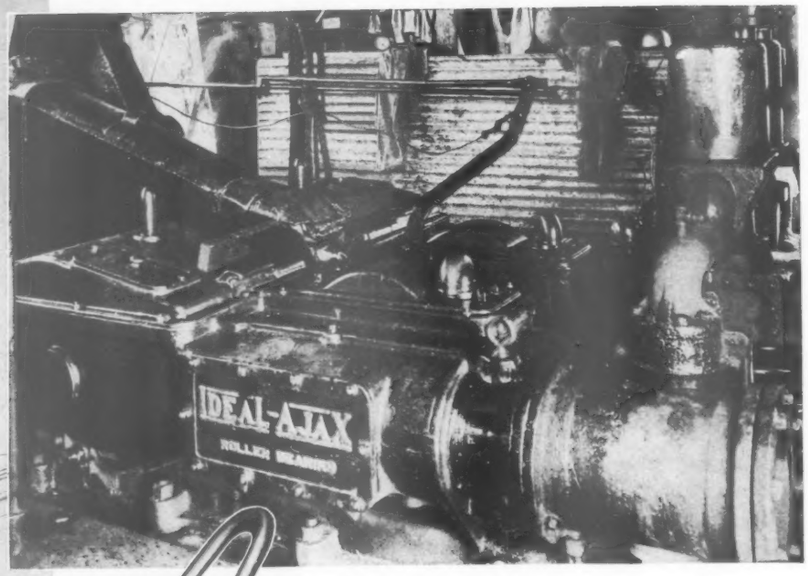


Fig. 24—Running submerged pump unit into well



The Continental Oil Company's record deep well No. 2-A Kern County Line, Kern County, California.



Ideal Ajax Timken Bearing Equipped Twin Cylinder Steam Engine used in drilling this well.

Oil Well 150A Timken Bearing Equipped Swivel as used at the well.

Again TIMKEN Bearing Equipment Breaks The Deep-Drilling Record!

TIMKEN Tapered Roller Bearings have participated in many of the oil industry's most outstanding accomplishments, including the drilling of many of the world's deepest wells.

So it is not surprising to find TIMKEN Bearing equipment again to the fore in the consummation of the latest and deepest of all the deep wells. (15,004 feet at time of writing).

TULSA OIL SHOW
BEARING EXHIBIT
SPACES 72 and 73, TEXAS BLDG.
STEEL EXHIBIT
SPACES 10, 11 and 12, REFINERS' AND MARKETERS' BLDG.

The drilling of this sensational Continental Oil Company wild catter was started and finished by a 12" x 12" Ideal Ajax Twin Cylinder Steam Engine equipped with TIMKEN Bearings on the crank shaft.

An Oil Well Type 150A Swivel equipped with TIMKEN Main and Auxiliary Bearings carried all of the loads incidental to the drilling of the well and loading of the casing, which included the second longest string ever loaded. (11,573 feet of 7-inch 30 lb. extreme line casing).

Performances such as this merely emphasize a fact that has been familiar to oil field operators for years, namely that TIMKEN Bearings greatly increase the speed, dependability and endurance of any piece of equipment in which they are installed.

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Manufacturers of TIMKEN Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; TIMKEN Alloy Steels and Carbon and Alloy Seamless Tubing; TIMKEN Rock Bits; and TIMKEN Fuel Injection Equipment.

TIMKEN
TAPERED ROLLER BEARINGS

with the regular field collection system.

For producing individual wells a unit consisting of a filter system, triplex pump and prime mover is provided for supplying the operating fluid under pressure. Since this has been described in detail by the author,[15] Maroney and Wheeler,[16] Crawford[17] and others, it will not be repeated. Figure 25 shows this unit diagramatically. Figure 26 shows a unit provided with multi-cylinder gas engine drive. Where clean oil is provided from some other source, a direct-connected triplex unit as shown in Figure 27 is provided.

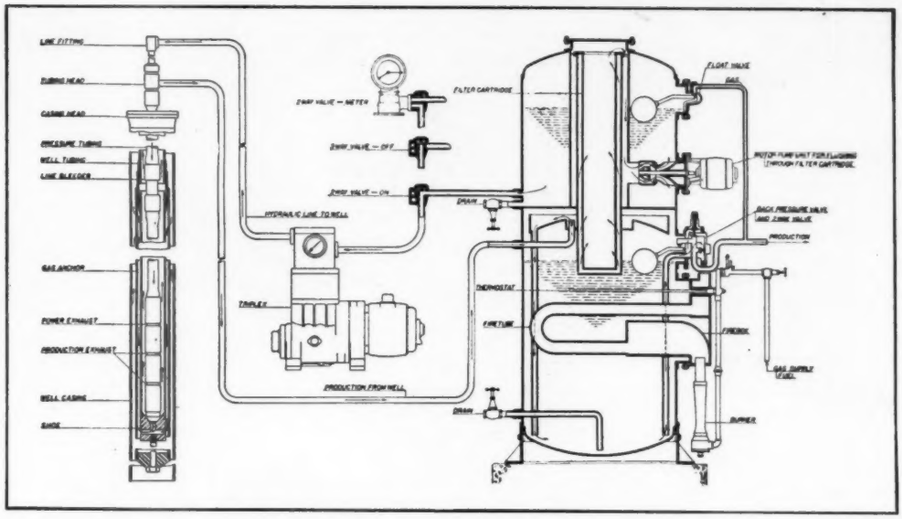


Fig. 25—Flow diagram of hydraulic pump system

Figure 28 is a sectional diagram of the subsurface unit. Clean oil is conducted down the well by the macaroni or inner tubing and operates the engine attached to the lower end of this tubing. Exhaust fluid from the engine discharges into the annular space between the pressure tubing and

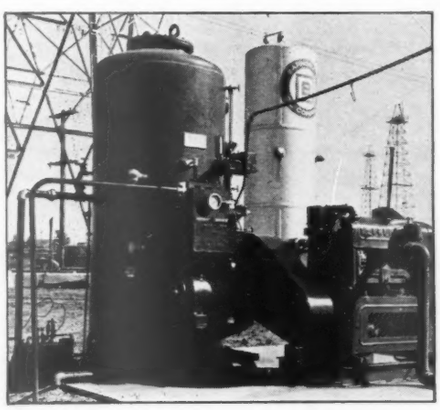


Fig. 26—Surface equipment with gas-engine drive

production tubing and returns to the surface. The pump operated by the engine draws oil from the well and discharges it into the same annular space.

The pressure fluid enters the engine through the four-way pilot-operated valve. In the position shown in the drawing the valve permits the passage of pressure fluid into the top end of the power cylinder. The bottom end of the power cylinder is connected to exhaust through the passage around the power cylinder and the exhaust passage in the valve.

The piston is provided with a piston rod extension which slides through the valve body and has ports (not shown in the drawing) that control the movement of the valve. In the position shown the ports in this rod apply pressure under the valve and cause it to move to its up position.

When the valve is in its upper position, power fluid is supplied through the lower pressure port and the passage around the cylinder to the bottom-end of the power cylinder. The top of the power cylinder is at the same time connected to exhaust through the valve exhaust port. The plunger then moves to the top of the cylinder and the ports in the piston rod extension again open the space under the valve to exhaust causing the valve to move down and the cycle is repeated. To prevent hydraulic shock and permit smooth operation at all pressures and speeds, the actual movement of the valve and its control is considerably more involved than explained here.

The engine plunger is connected by a piston rod to a pump plunger of equal diameter located in the production cylinder below the power cylinder. Both ends of the pump cylinder are provided with exhaust ball valves which communicate with the exhaust space between the pump and the production tubing. Both ends of the pump cylinder are also provided with intake ball valves which communicate with the well through the passages in the pump seat and tubing shoe.

When the pump plunger is moving upward oil is drawn in below the plunger through the lower intake valve, and the oil above the plunger is forced out through the upper exhaust valve. When the plunger is moved downward oil is drawn in above the plunger through the upper intake valve, and the oil below the plunger is forced out through the lower exhaust valve. The pump plunger has a lower piston rod extension which is of the same diameter as the middle rod and upper rod, and serves to balance the system hydraulically. The pump, therefore, is full double-acting and intakes and discharges an equal quantity in each direction.

The piston rods and plungers have a continuous central passage which conducts filtered power oil to a groove around the middle of the pump plunger and to the lower rod bushing. Thus all of the sliding surfaces are lubricated with clean power fluid.

The engine and plungers are usually made of equal diameter and hence the operating pressure is equal to the pressure of the static pumping head plus friction. For lifting large quantities of fluid from shallow wells the pump plunger can be larger than the engine piston and for extreme depth the opposite relation is used to reduce the operating pressure.

Capacity Limitations.—The important factors which determine the maximum capacity of pumps of this type are stroke, plunger speed, fluid acceleration, pump diameter and permissible friction loss in the tubing.

The maximum plunger speed and fluid acceleration which may be used depend largely on the velocity in the intake passages to the pump, the viscosity of the pumped fluid at bottom-hole conditions and the permissible submergence head over the pump. The recommended plunger speed gives substantially the same acceleration factor for all sizes. The acceleration factor N^2L is approximately 40,000 which from (10) is 57 per cent of gravity. Speeds 50 per cent above the recommended value are giving satisfactory field performance. Figure 29 shows the capacity of hydraulic pumps at this rated speed as a function of the nominal pump size (i.e. the diameter of the production tubing).

The capacity of pumps of this type is nearly independent of depth and depends largely on the

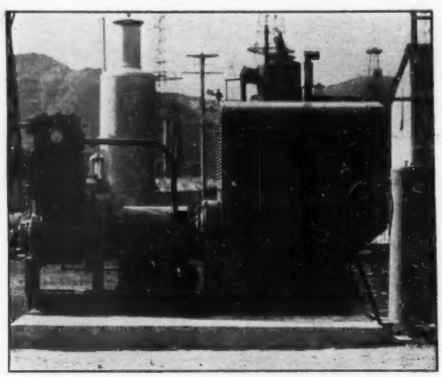


Fig. 27—Triplex operating pump gas engine drive without filter

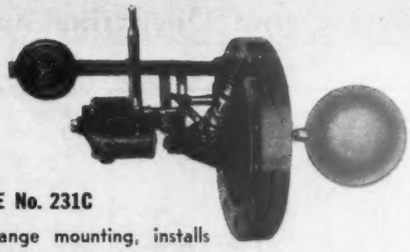
well tubing diameter. Table 4 gives data on the standard sizes available.

Friction loss in the tubing is also a limiting factor. Assuming that this loss is to be limited to 10 per cent of the power input, Figure 30 shows the capacity as a function of viscosity with the tubing combinations shown. The dotted lines are for sizes not in use at this time. Figures 29 and 30 show that this type of pump is suited to both large and small capacity if the well casing size will permit using the proper tubing size.

Depth Limitation.—This pump is at present designed for pressures corresponding to 10,000 feet. A redesign with heavier sections and hence smaller plungers will permit pumping from any desired depth. Hydraulic pumps are, however, limited the same as rod pumps by the strength of

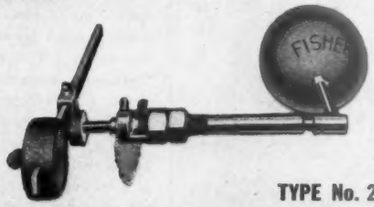
TABLE NO. 4—PRODUCTION-UNIT DATA

	Pump size			
	2-inch	2½-inch	3-inch	4-inch
Outside diameter, inches	1⅞	2⅛	2⅝	3¾
Length, inches	78½	105½	136½	173
Weight, pounds	42	85	175	370
Stroke length, inches	12	18	24	30
Capacity, barrels per day	100	200	400	800
Speed at capacity, s.p.m.	47.7	40.7	42.4	38.1
Piston speed at capacity, feet per minute	95.3	122.0	169.4	190.6
Displacement per stroke, gallons	0.0612	0.143	0.275	0.612
Displacement per stroke, barrels	0.00146	0.00342	0.00656	0.0146
Displacement, barrels per day per s.p.m.	2.10	4.92	9.44	21.0
Operating fluid per stroke, gallons	0.0627	0.146	0.280	0.619



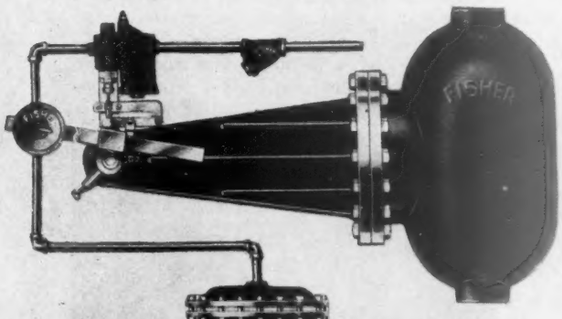
TYPE No. 231C

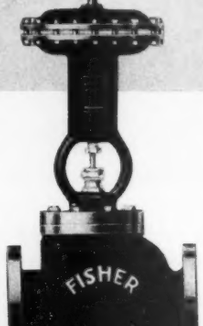
Internal Float, flange mounting, installs directly on sides of towers, drums, columns, etc. For either direct operating or remote control service. 8" and 10" flanges. Semi-steel or cast steel. Available with pilot valve and switches.



TYPE No. 273C

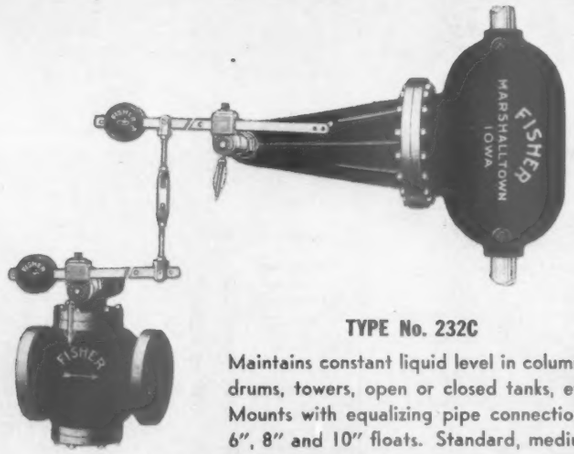
Tank Stuffing Box Float Unit screws directly into wall of tank. For operating lever valves, signals, switches, etc. Friction-free operation. 6", 8", 10" and 12" floats. Pressures up to 1,000 lbs. Available with pilot valve and switches.





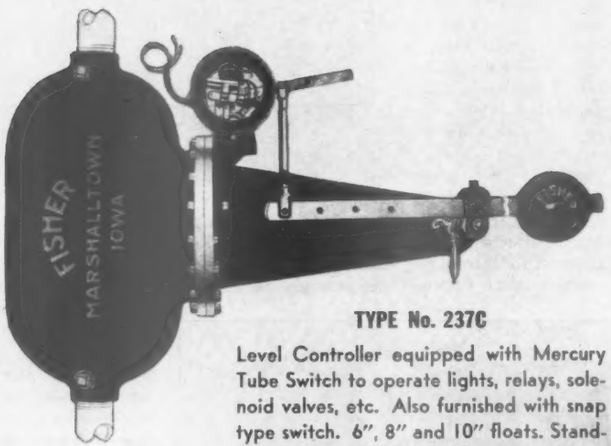
TYPE No. 235C

Full throttling Pilot Valve allows Diaphragm Motor Valve to be installed remotely from Level Controller cage. All parts accessible without shutting down process or tower. Friction-free operation. 8" float. Standard, medium and high pressure cages.



TYPE No. 232C

Maintains constant liquid level in columns, drums, towers, open or closed tanks, etc. Mounts with equalizing pipe connections. 6", 8" and 10" floats. Standard, medium and high pressure cages.



TYPE No. 237C

Level Controller equipped with Mercury Tube Switch to operate lights, relays, solenoid valves, etc. Also furnished with snap type switch. 6", 8" and 10" floats. Standard, medium and high pressure cages.

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the tubing. Recommended setting depth and safe internal working pressures in terms of fluid head in feet with specific gravity of 1.0 for Grade "C" and Grade "D" A.P.I. external upset tubing are given in Table 5.

Hydraulic pumps are particularly adapted to lease operation where the entire property is operated from a central system. Obviously, this arrangement will effect certain economies in investment and operation. Such a central plant can operate any number of wells each having pumps of either the same or different sizes and operating at independently controlled speeds.

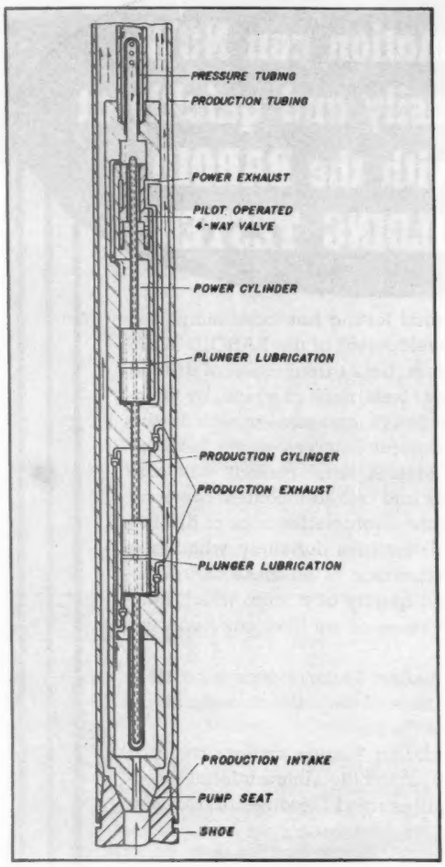


Fig. 28—Diagram of subsurface pump

TABLE NO. 5—SETTING DEPTHS FOR TUBING

Tubing size (inches)	Wt./ ft.	Setting depth—Tension Grade "C" factor 2½	Tension Grade "D" factor 2½	Internal pressure Grade "C" factor 2½	Internal pressure Grade "D" factor 2½
¾	1.20	9,086	11,650	14,900	20,450
1	1.80	8,991	11,500	14,000	19,220
1¼	2.40	9,130	11,700	11,700	15,000
2	4.70	9,100	11,650	11,100	14,000
2½	6.50	9,140	11,710	10,400	13,200
3	9.30	9,135	11,700	10,050	12,700
4	12.75	9,280	11,860	8,300	10,600

*Not A.P.I. standards.

Summary

Pumping problems become increasingly difficult with depth with all of the methods of pumping now in use.

Rod Strings of Uniform Cross-Section.—A definite depth limit is reached for each permissible stress value assumed beyond which no fluid load can be carried without overstressing the rods. For stresses within the endurance limit of present steels this depth limit is within the range desired.

With static loading the pump area for maximum production is directly proportional to the polished rod stroke, the area of the rod, and inversely proportional to the square of the length of the rod. The pump stroke is one-half the polished rod stroke when using the pump area for maximum production. This pump area should never be exceeded and should only be used when the stress set up in the rods by its use is within the endurance limit.

The net pump stroke is approximately equal to the polished rod travel plus the pump overtravel minus the rod and tubing stretch. Overtravel as a correction factor to polished rod stroke is proportional to the square of both the rod length and the strokes per minute.

The approximate maximum polished rod load is the fluid load plus the rod load in fluid plus the acceleration of the rod load.

Dynamic loading increases the net pump stroke at the expense of increased rod stress.

The negative acceleration at the beginning of the down stroke should not exceed acceleration of gravity. This establishes a maximum number of strokes per minute for each stroke length.

The maximum horsepower that can be transmitted with an oscillating rod string is directly proportional to the rod area and the square root of the polished rod stroke. The horsepower reaches zero when the rod stress due to its own weight in fluid plus its acceleration is equal to the maximum permissible stress.

Rod Strings Designed for Uniform Stress.—Pump area is directly proportional to the rod area at the pump and the permissible stress.

Rod diameter at any point can be determined as an exponential function of rod diameter at the pump. To correct for additional rod stresses due to acceleration the same relation can be used with the allowable stress factor reduced in proportion to the acceleration factor.

Stretch due to fluid load plus static rod load is directly proportional to the unit stress and the rod length.

The stretch due to fluid is an exponential function.

The overtravel is twice the change in rod length due to acceleration. This change can be computed from relation for the stretch of the rod under gravity.

The stretch of tapered rod strings designed for uniform stress is greater than for a straight rod string designed for the same stress at the top.

The maximum horsepower transmitted is proportional to the unit stress, the rod area at the pump and the square root of the polished rod stroke. The horsepower goes through a minimum at about 5,000 feet and at 12,000 feet is the same as at zero feet. The minimum with a 60-inch stroke is 50 hp. and with a 100-inch stroke is 95 hp.

General.—Tapered rod strings are necessary at depths greater than 5,000 feet with present endurance limits.

The total load at the polished rod with tapered rod strings increases rapidly with depth. To produce more than 200 bbls. per day at 12,000 feet, pumping units heavier than now available will be required. To produce 1,000 bbls. per day at this depth a total load of 160,000 pounds will be required if the rod stress is limited to 30,000 pounds per square inch.

Long stroke units have larger capacity approximately in proportion to the square root of the stroke length.

Pneumatic pumpheads are particularly suited to long strokes and greatly reduce peak rod stress caused by dynamic loading.

Pneumatic counterbalance is adapted to heavy loads and will give lower peak rod loads than beam or crankbalance.

Submergible electric motor pumps are adapted to deep wells and larger productions. Capacities of this type of pump exceeds any positive displacement pump now available.

Hydraulic pumps are adapted to both large and small production and to wells of 10,000 feet or more in depth. This method can be applied to both individual wells and central plant operation.

The writer wishes to acknowledge the assistance of E. M. Wagner and O. R. Broberg in the preparation of this paper. Valuable information regarding some of the equipment was supplied by G. H. Bowlus, P. E. Loye, P. D. Cornelius, M. E. Tedford, C. T. Reichert, W. Loury, E. P. Trout, Ray M. McCollum and L. R. Humphrey.

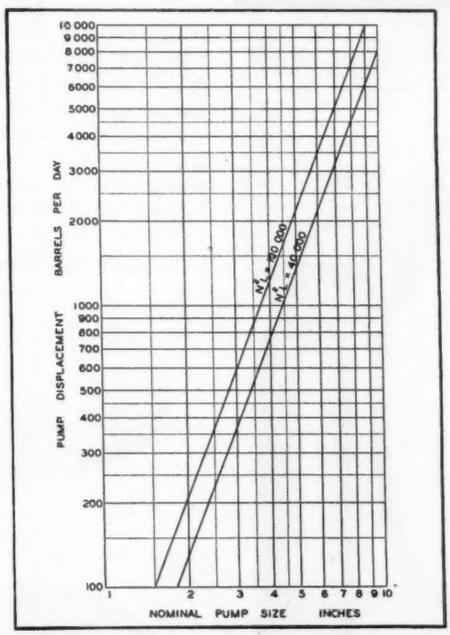


Fig. 29—Capacity of hydraulic pumps as a function of nominal pump size for acceleration factors shown

15. C. J. Coberly—Hydraulic Power Applied to Oil-Well Pumping. A.P.I. Drilling and Production Practice, 1935.

16. B. M. Maroney and F. R. Wheeler—Oklahoma City Field Pumping. Presented annual meeting of A.P.I. November, 1937.

17. J. W. Crawford—The Use of Hydraulic Pumps in Mid-Continent Fields. Presented spring meeting of A.P.I. Amarillo, Tex., February, 1938.

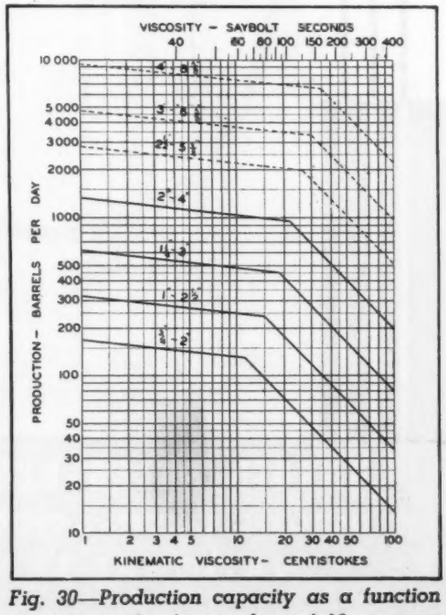
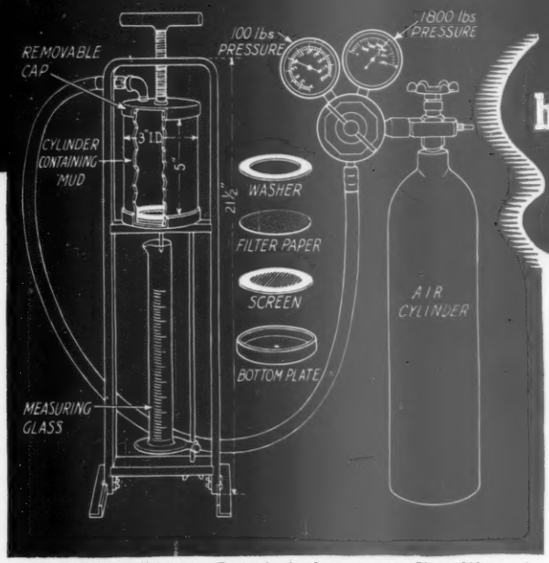
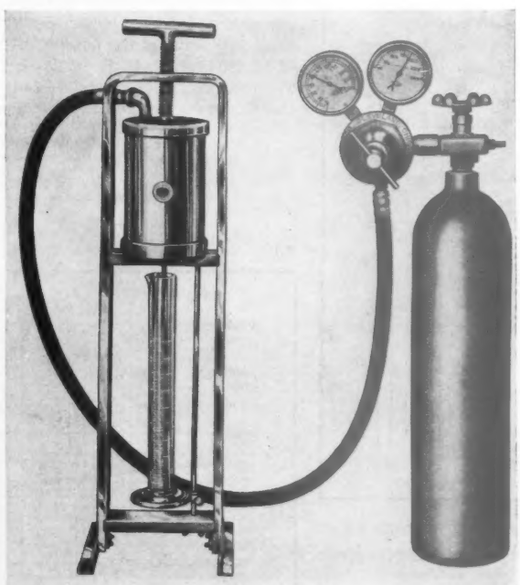


Fig. 30—Production capacity as a function of viscosity for friction loss of 10 per cent of power input

FILTER CAKE THICKNESS AND WATER LOSS INDICATE THE QUALITY OF DRILLING MUD



***The BAROID Wall-Building Tester** is simple to operate. About 600 c.c. of mud is placed in the cylinder, in the bottom of which is a filter paper and screen. One hundred pounds pressure applied from the air cylinder compresses the mud cake. The water loss is measured at desired intervals by means of a graduated cylinder. When the test has proceeded for a desired length of time, the mud is removed and the total water loss and cake thickness measured. Cylinder contains sufficient air for numerous tests.*



***The BAROID Wall-Building Tester** shown, which is particularly designed for field testing using 100 pounds pressure, is light (approximately 30 pounds), simple to operate and inexpensive. BAROID Wall-Building Testers, designed for pressures up to 2000 pounds and temperature control up to 200° Fahrenheit, are also available at all BAROID Sales offices.*

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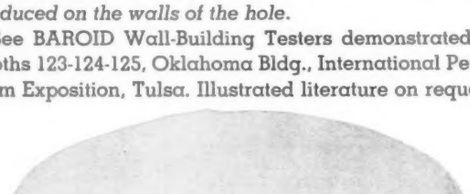
The BAROID Wall-Building Tester makes it possible to see the relative thickness of the cake actually being produced on the walls of the hole.

See BAROID Wall-Building Testers demonstrated at Booths 123-124-125, Oklahoma Bldg., International Petroleum Exposition, Tulsa. Illustrated literature on request.



Thin filter cake (actual size) deposited in BAROID Wall-Building Tester by a good mud having low water loss. This mud would keep a hole in good condition.

Thick filter cake (actual size) deposited in BAROID Wall-Building Tester by a poor mud. This mud would tend to cause "tight" hole and the high water loss would promote caving.

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Recent Improvements in Natural Gasoline Manufacture

By H. H. BEESON
Sabine Valley Gasoline Co., Inc.*

Manufacture of natural gasoline in East Texas is an interesting study because of several characteristics peculiar to the East Texas field. First it is unusual from the field standpoint; one gasoline plant operates on gas taken from a large number of wells, the majority of which make their allowed production in 15 minutes to one-half hour's time, and which number tied into each plant would be a large oil field in itself. Another interesting feature is in the gas which not only is rich in gasoline, but contains large quantities of butane and propane.

At the present time there are 13 large gasoline plants in the field beside several small units. These plants are connected to the majority of the 25,000 wells comprising the field and produce in the neighborhood of 750,000 gallons of gasoline, butane and propane per day or about 540,000 bbls. per month.

The Sabine Valley gasoline plant, which is located about four miles north of Kilgore, began operating on April 22, 1935, and has been operating continuously since that time with the exception of two shutdown periods, 12 hours in 1936 to tie in an additional unit, and two days in 1937 to tie in additions for the production of butane. This plant was constructed in three months under the direct supervision of H. R. Dickerson, president of the company. At the present time the plant is capable of processing 12,000,000 cubic feet of gas per day, producing 60,000 gallons of 26-pound natural gasoline and 50,000 gallons of butane-propane mixture. The present equipment is designed to manufacture a butane mixture containing 10 per cent propane, but provisions have been made for the installation of additional equipment to recover 70 per cent of the propane available in the wet gas.

Field System

It is general practice for the oil producers to flow their oil through one oil-and-gas separator centrally located on the lease. One separator handles as many as 40 wells although most of the larger leases have more than one separator. These separators are usually elevated so that the oil will gravitate into the stocks tanks and atmospheric pressure or less may be maintained on the separator. This is an advantage to the gasoline plant operator in that a higher gas-oil ratio and a richer gas is thus obtained.

The Sabine Valley plant pipe line system consists of about 75 miles of pipe ranging from 20-inch to 4-inch in diameter. The system branches out from the plant and connects to the vent lines from the separators on the leases. Paralleling these gathering lines, which operate under a vacuum, is a pressure system which returns the residue gas back to the producers for lease operations.

The gas from the vent line is measured by an orifice meter and passes through a regulator which is set to maintain sufficient pressure on the separator to dump the oil into the stock tanks. In most cases the separators are elevated so that atmospheric pressure is required, while other separators on the ground may require as much as 8 or 10 pounds pressure. Under these low pressures there are practically no vapors coming off the oil storage tanks, and no connections have been made to the vapor space of these tanks. The weighted average separator pressure maintained on the leases is less than 1 pound.

On the west side of the field a number of the wells are producing salt water, making it necessary to treat the oil, which is usually done by heat, although in some cases chemicals or a combination of chemicals and heat are used. Where heat is used the treatment is done in several ways. The older custom is to flow the oil from the separator into a settling tank or gun barrel, where the required heat is obtained by circulating the salt water from the bottom of the gun barrel through an ordinary boiler. In this way the rich vapors driven off by the heat treatment are lost unless the gasoline plant operator connects onto the top of the gun barrel. Another practice is to flow the oil into a combination heater-separator, in which case the rich vapors go off with the usual gas and are received into the gasoline plant. A third method is that of flowing the oil through a heater before going to the separator, which heater may be a boiler or may just be a heated pipe coil, and the gasoline plant benefits also by this treatment.

In order to keep a uniform supply of gas coming into the gasoline plant throughout the day and night it is necessary that a definite time schedule be worked out for these wells to flow, and the maintenance of this schedule speaks well for the cooperation obtained from the producers and lease operators. This schedule is usually arranged so that a producer will alternate his leases between day and night flow, or one producer may alternate with another producer.

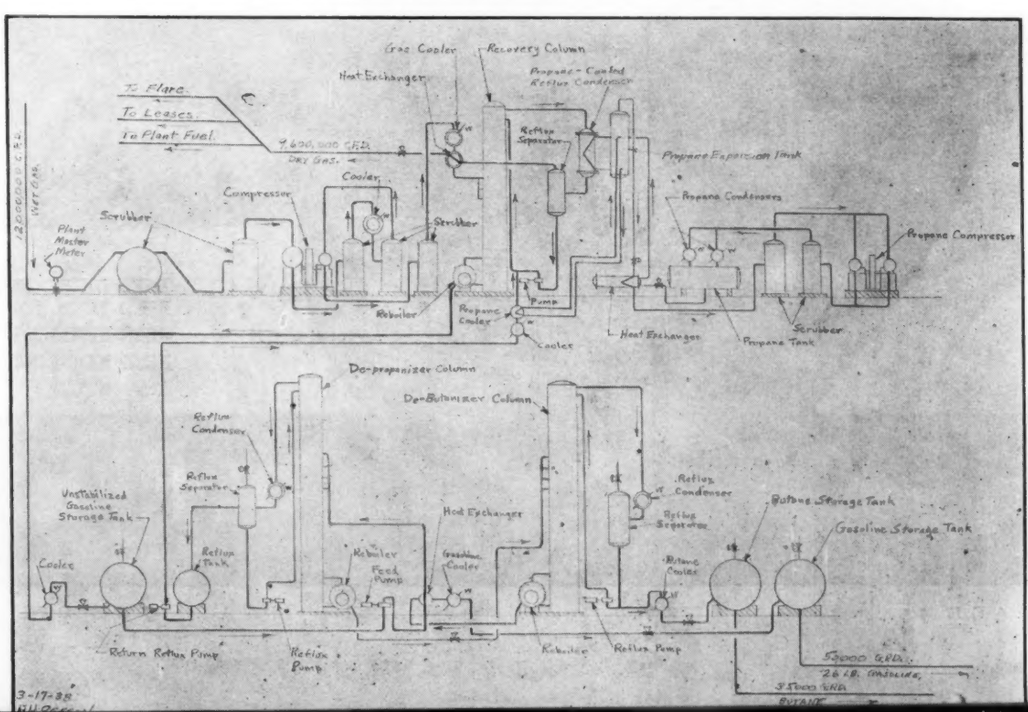
Plant Flow Sheet

The process employed by Sabine Valley is the vapor rectification process, operating under Petroleum Engineering, Inc., patents, which consists essentially of compressing the wet gas up to a required pressure and passing it into an ordinary fractionating column or stabilizer. The gasoline product is taken from the reboiler and gas passed out the top through coolers for condensing reflux. In order to recover a high percentage of butane in the product, it is necessary to operate the column at lower temperatures than found in an ordinary vapor rectification plant. Since reflux is condensed at a temperature lower than can be obtained by using water as a cooling medium, boiling propane is used for this purpose.

The process is shown in detail in the accompanying flow sheet. The wet gas comes into the plant through four master meters into two tanks, where any large quantity of oil is removed, and then to scrubbers for extracting any entrained oil. The compression plant, which consists of 12 twin Cooper Bessemer direct-driven gas engine compressors, compresses the gas from 10 inches vacuum to about 40 pounds gauge in the low stage, and discharges into a scrubber to remove any compressor oil. The intercoolers are maintained at a temperature that will sufficiently

(Continued on Page 101)

Schematic flow diagram of Sabine Valley Gasoline Co.'s East Texas natural gasoline plant



*Presented at annual meeting of the National Gasoline Association of America, May 11-13, 1938.

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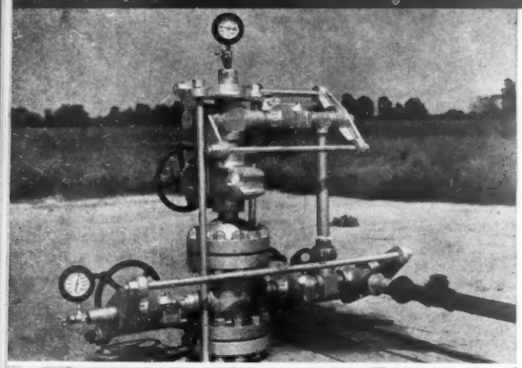

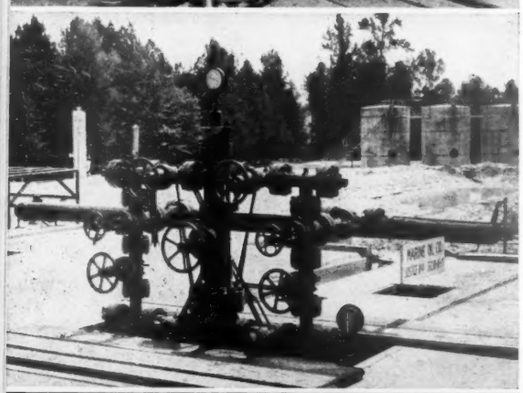

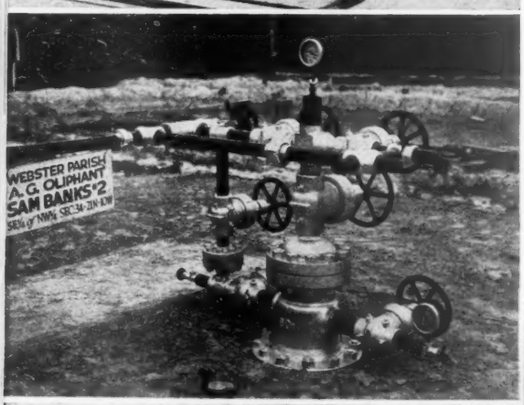

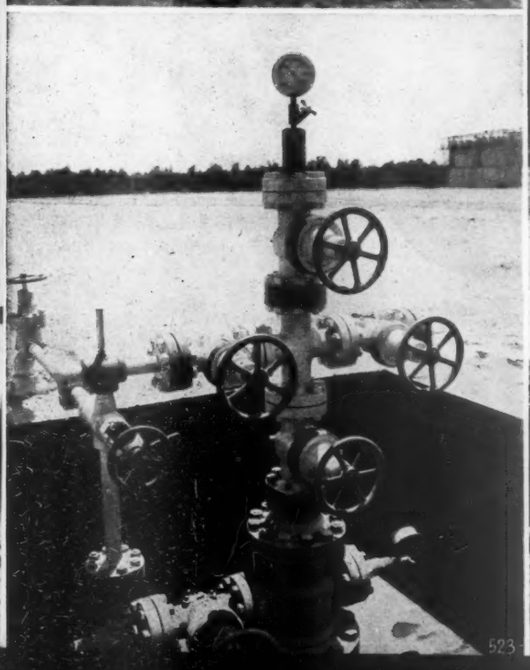

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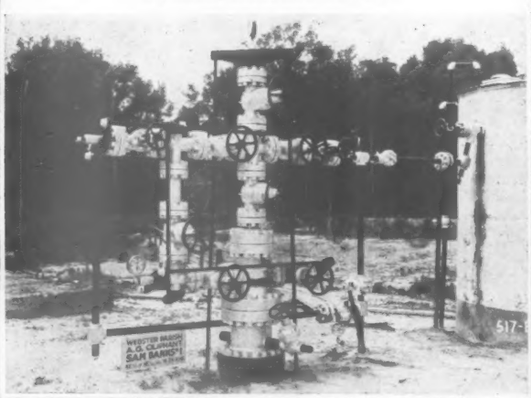
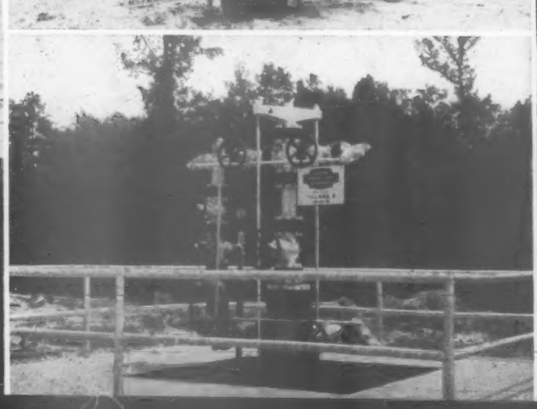
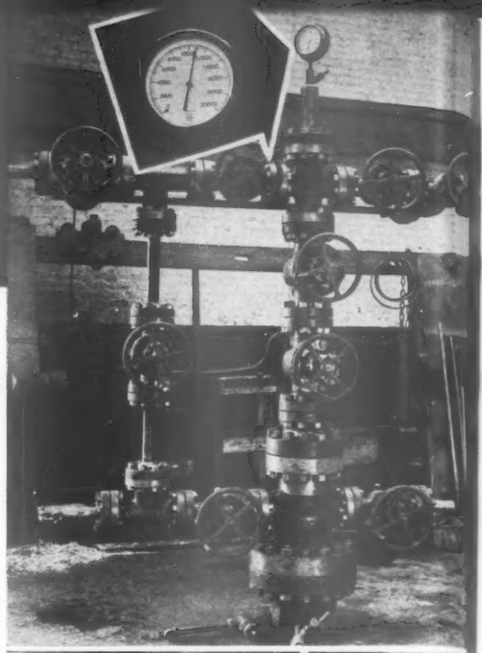
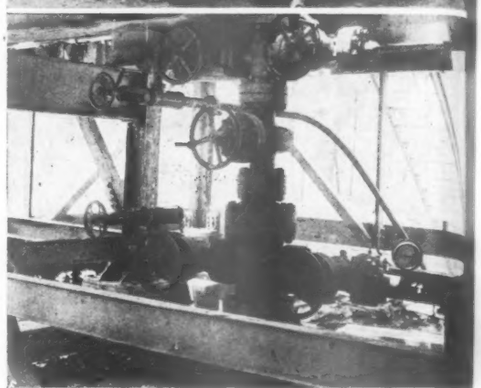
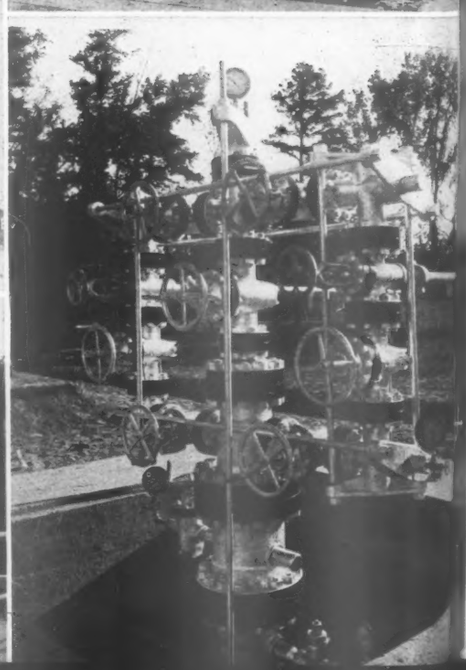










cool the gas but minimize condensation, since gasoline obtained here is off-color and no provision has been made for treating this product. From the intercooler gas scrubber the gas is compressed to about 285 pounds pressure, discharged into a scrubber and then into a water-cooled gas cooler and a gas exchanger which further cools the gas to about 85° F. before entering the recovery column. This column is a standard fractionating column, 60 inches in diameter, containing 24 bubble trays, and operates at 275 pounds pressure.

A temperature of about 220 degrees is maintained in the reboiler. This temperature gives a product having a vapor pressure of about 65 pounds Reid and containing practically all of the butanes and an excess quantity of propane which is later removed. No appreciable amounts of methane or ethane are present.

TABLE 1—PLANT UTILITY DATA

Field compressor horsepower	2,760
Propane compressor horsepower	460
Boiler horsepower	438
Distillation unit water circulation, g.p.m.	2,100
Jacket water circulation, g.p.m.	2,100
Butane-propane storage, gallons	100,000
Gasoline storage, gallons	100,000

The gas from the top of the column passes through three vertical condensers, operating in parallel to condense the reflux necessary for the column's operation. The condensed vapors are cooled to about 42° F. and passed through the gas exchanger cooling the wet gas. From the exchanger the residue gas passes through a back-pressure valve operating to hold a constant pressure on the recovery column. The gas then enters the field residue gas system, the pressure being maintained at 175 pounds by venting off and burning the unused gas.

It has been found that the quantities of water vapor in the wet gas will form hydrates at the low temperatures required in the condenser tubes, thus greatly decreasing the condenser efficiency. A water trap has been placed on the feed line between the gas exchanger and the recovery column, and removes a considerable amount of water that would otherwise be carried into the reflux condenser. It is also necessary to periodically allow the reflux condensers to heat up for about ten minutes to "defrost," or thaw out the hydrates.

Propane Used as Reflux

Since practically all of the butanes are recovered in the recovery column bottoms, propane must be condensed for reflux. This is done by cooling the overhead vapors down to about 42° F. using boiling propane as a cooling medium. The system is designed to use propane as a refrigerant because practically pure propane is available in the reflux stream over the depropanizer column. The propane circulates in a closed system which consists of compressing the propane gas to about 200 pounds, at which pressure it is condensed in water-cooled condensers, and collected in a tank. From the propane tank the liquid passes through an exchanger and into an expansion tank, which is merely a common vessel connected to each condenser at the bottom for the liquid to enter and at the top for the vapors to escape. The expansion tank is at the same level as the condensers, and a propane level is maintained in the tank so that the condensers will be filled with liquid. This tank, as well as the three condensers, is insulated to retain the cold temperatures. The cooling in the reflux condensers is obtained from the latent heat of vaporization of the propane, and not from the expansion. The temperature is governed by the back pressure held on these units, averaging about 60 pounds.

The gasoline and butane-propane mixture from the reboiler pass through coolers into a surge tank, which takes up slight variations in the load so that a constant feed rate may be had for the stabilization units. As stated before, this product contains an excess quantity of propane, which is later removed. Specification product could be made on the recovery column, if there were no variations in the wet gas load, but since every change in the load alters the equilibrium in the column, it is advisable to make a higher vapor pressure product here and stabilize in a second step.

The unstabilized mixture is pumped through a heat exchanger into the depropanizer fractionating column. This column is 42 inches in diameter and contains 30 trays, and is now operating at 225 pounds pressure. All of the overhead vapors are condensed, the excess liquid flowing into a reflux tank. The normal reflux rate used in the depropanizer is about six mols reflux to one mol excess reflux. This excess reflux is pumped from the reflux tank through a water-cooled cooler and a propane-cooled cooler so as to lower its temperature to the same as the recovery reflux stream, with which it is mixed as needed. A flow controller measures the total reflux pumped into the recovery column and operates the excess reflux pump. A liquid-level control on the reflux separator operates a pump so that this reflux is all pumped directly into the column. These two reflux streams give a ratio of about one-half mol reflux to one mol dry gas.

The depropanizer reboiler is operated at 220° F., although the temperature may be varied to adjust the amount of propane required in the butane propane product. The boiler product passes directly into a debutanizer fractionating column, 66 inches in diameter and containing 30 trays, now operated at 150 pounds pressure. This fractionates out the remainder of the propane and the excess butanes not required in making the desired vapor pressure gasoline. All of the overhead vapors are condensed and the excess liquid passes through a cooler and to the butane propane storage tanks. A reflux ratio of about three mols reflux to one mol overhead product is maintained. The butane-propane product and the natural gasoline are sold to Hanlon-Buchanan, Inc., who pumps these products from the tanks into its pipe line gathering system.

The auxiliary equipment consists of steam-driven centrifugal water pumps and an electric generator. Water supply is obtained from three deep wells operated by gas lift. This water goes directly into the cooling-tower pit from which pumps circulate it through the closed type coolers and back over the louvre-type cooling tower. Most of the coolers on the fractionating equipment are connected in series so that the coldest water goes where the lowest temperatures are required, and then goes to other coolers where higher temperatures may be maintained. If all of the units were placed in parallel, a much larger amount of water would have to be circulated. A control holds a constant level in the cooling-tower basin by allowing the excess hot water to flow into the jacket water hot well pit, and which amount is equal to the well water flow less the cooling tower loss.

Operation Data

Table 1 shows the plant utility data.

An analysis typical of the gas coming into the plant is as follows:

	mol %	g.p.m.
Methane	40.96	...
Ethane	15.97	...
Propane	22.29	6.13
Iso-butane	4.01	1.30
Normal butane	10.05	3.18
Iso-pentane	2.67	0.97
Normal pentane	1.96	0.63
Hexanes	1.29	0.53
Heptanes and heavier	0.80	0.37
	100.00	

The composition will vary somewhat over the field, but the atmospheric temperature and the separator pressures have more effect on the heavier hydrocarbons since at the present time the gas is in solution in the oil at bottom-hole pressures. The gas contains practically no sulfur, so no caustic or doctor treatment is necessary.

The present operation of the Sabine Valley plant is to recover over 90 per cent of the butanes and enough propane to produce a mixture of butanes containing 10 per cent propane. An analysis of the residue gas from the plant is as follows:

	mol %	g.p.m.
Methane	52.96	...
Ethane	18.23	...
Propane	27.93	7.67
Iso-butane	0.47	0.15
Normal butane	0.41	0.13
	100.00	

This shows 0.28 gallons of butanes per 1,000 feet of dry gas, or since the volume of residue gas is approximately 80 per cent of the wet gas, there is only 0.22 gallon butanes per 1,000 feet wet gas. This represents 95 per cent butane extraction.

An analysis of the butane-propane product being manufactured is shown in Table 2, and an analysis of the 26-pound Reid natural gasoline in Table 3. The A.P.I. gravity on the 26-pound averages about 90.9. The recovery at 140° F. Engler distillation averages 95 per cent.

TABLE 2—ANALYSIS OF BUTANE-PROPANE PRODUCT

	Liquid volume per cent
Propane	10.76
Iso-butane	32.95
Normal butane	56.29
	100.00

TABLE 3—ANALYSIS OF 26-POUND NATURAL

	Liquid volume per cent
Iso-butane	1.05
Normal butane	31.61
Iso-pentane	22.24
Normal pentane	19.08
Hexanes	16.42
Heptanes plus	9.60
	100.00

The operating conditions on the three columns are summarized in Table 4.

TABLE 4—COLUMN OPERATING CONDITIONS

	Recovery column	Depropanizer	Debutanizer
Operating pressure	*275	*225	*150
Feed temperature	†85	†154	†190
Reboiler temperature	†220	†230	†236
Top temperature	†70	†118	†174
Reflux ratio	0.5/1	6/1	3/1

*Pounds. †Degrees.

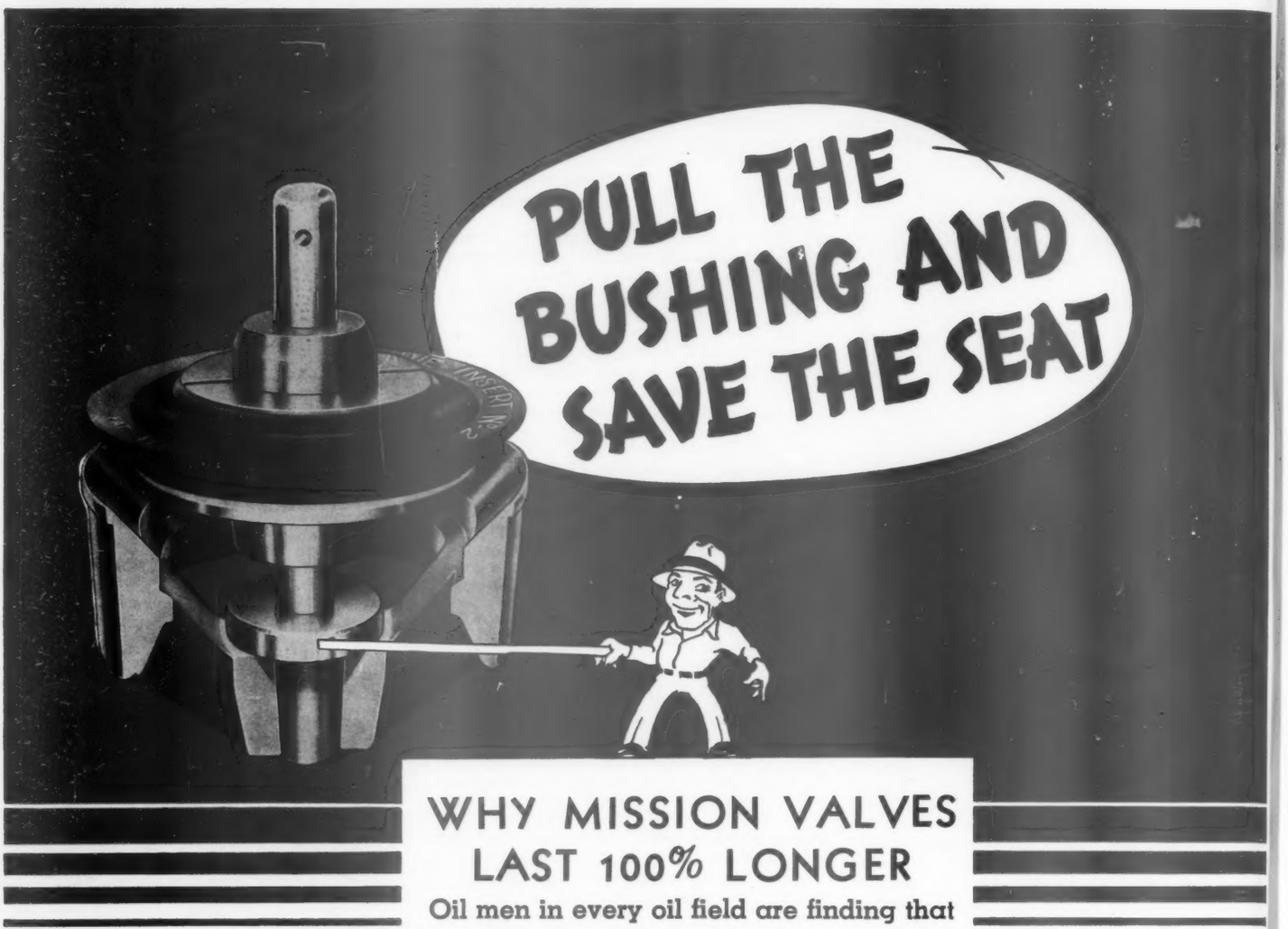
The production data from the Sabine Valley plant for March on the basis that there had been no Sunday shutdowns are as follows:

Average daily gas, feet	10,917,000
Average 26-pound daily production, gallons	45,317
Average propane butane daily production, gallons	34,247
Average total daily production, gallons	79,564
Average oil flowed daily on leases, barrels	33,432
Average gas-oil ratio	327
Average gallon 26-pound gasoline recovered per barrel oil	1.355

Conclusion

The vapor rectification type of plant is especially applicable to the type of gas in the East Texas field due to the large percentages of ethane, propane and butanes. When additions are made to the Sabine Valley plant for the recovery of high percentage of propane, it will be necessary to condense ethane for reflux. This will require compressing the overhead vapors from the recovery column to approximately 700 pounds pressure before passing through the reflux condensers. The reflux obtained will be expanded into the top of the column.

The advantage of this type over the absorption type is the installation cost and the ease and economy of operation. The process in itself is quite simple and requires a minimum of attention from the operator. The cost is low due to the low water circulation and the low quantity of steam required. It is also an advantage to have high-pressure residue gas available for the field where a saving is obtained in the smaller residue pipe lines required.



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Developments in Oxyacetylene Welding of Pipe Lines

By F. C. HUTCHISON
The Linde Air Products Co.*

During the past year, two developments of far-reaching importance have resulted not only in speeding the oxyacetylene welding of overland pipe lines, but also in producing higher quality welds at low cost. These are: (1) new four-flame tips for bell-hole or position welding, and six-flame tips for rotating welds, and (2) a new low-alloy steel welding rod. In addition, a new procedure, known as the one-third roll method of pipe line construction, has proved to have a number of advantages under certain conditions over methods formerly used. Following a brief description of the new tips and rod and the one-third roll method of construction, the results obtained on a recently completed high-pressure gas line will be discussed in some detail.

Developments in Welding

The oxyacetylene welding of pipe lines dates back to before the World War. However, in 1930, a revolutionary process, known as Lindewelding, was first introduced and largely displaced all former procedures. This process involved the use of backhand welding, an excess acetylene flame, and a special rod and flux. Welds were made in half the time and at half the cost of methods previously employed. This was followed, in 1934, by the development of a three-flame tip which was designed for making rolling welds and which further speeded pipe line construction. In the 10-year period from 1927 to 1936, a total of more than 14,000 miles of pipe lines was installed by oxyacetylene welding.

During the past two years, the all-bell-hole method of welding has made considerable progress and has been widely used throughout the country, displacing somewhat the rotation method of pipe welding. However, in spite of the economies effected through simplified organization, the all-bell-hole method requires slightly greater time for making the weld than it takes to make a rolling weld. This led to the development of the new four-flame tips, which, in combination with the new high-strength rod, now make it possible to produce a bell-hole weld in about the same time it formerly took to make a rolling weld. For example, on 16-inch diameter pipe with ¼-inch wall thickness, an operator can complete one of these position welds in 8 to 12 minutes. This is an average of about 5 linear inches of welding a minute. It is readily apparent that at these speeds, the advantages and savings resulting from the all-bell-hole method of pipe line construction may be fully realized.

Four- and Six-Flame Tips

The new four- and six-flame tips should not be confused with the various multi-flame tips used during the past few years for rolling welds. Formerly, a single-flame tip was used for bell-hole welding. To get heat distribution with a single flame tip it was necessary for the operator to manipulate the flame in order to heat the walls of the pipe ahead of the weld and keep a puddle of molten metal in the weld. This resulted in the loss of large quantities of heat.

The outstanding feature of the four-flame tip is that instead of having one large flame there are four small ones. These flames are so proportioned and located that little or no manipulation of the blowpipe is necessary. A continuous forward movement is all that is required. This cuts the heat loss considerably. In addition to the main welding flame, the four-flame tip provides two flames for preheating the vee. The fourth flame preheats the rod. The orifice for this flame is so located that the operator has control of the amount of rod preheated and melted regardless of the point of welding. All that is necessary is a slight manipulation of the rod in order to control the height and contour of the deposited weld metal.

The six-flame tip is designed for rolling welds and increases the speed over that for three-flame Lindewelding by 35 to 70 per cent, depending on the size of the pipe. This increased speed is made possible by a more effective application of heat. The tip has four flames for preheating the walls of the pipe, a fifth flame for preheating the rod, and a sixth flame for carrying on the actual welding.

WELDING CONDITIONS

Pipe diameter (ins.)	Wall thickness (in.)	Included angle (deg.)	Rod per weld (lb.)	Oxygen per weld (cu. ft.)	Acetylene per weld (cu. ft.)	Time per weld (min.)
6	0.250	60	0.38	8	8	4
8	0.250	60	0.45	11½	11½	6
8	0.375	50	0.75	16	16	8
12	0.250	60	0.80	17	17	9
12	0.312	50	0.90	19	19	10
16	0.250	60	1.00	21	21	11
20	0.250	60	1.25	26	26	13

Increased Speeds

Position welds of higher quality, with increased speeds and a reduction in gas consumption of at least 25 per cent per pipe joint, are now obtainable. The following data selected from field records will serve as a basis for comparison with older methods. Position welds in 8-inch diameter pipe with a ⅜-inch wall thickness were Lindewelded in approximately eight minutes with a four-flame tip. With this tip, joints on 16-inch diameter pipe with a wall thickness of 5/16-inch required only about 12 minutes.

In the case of rotating pipe joints, the six-flame tip averaged somewhat less than five minutes per weld on 8-inch pipe with a ¼-inch wall thickness, and approximately eight minutes per joint on 16-inch diameter pipe with a wall thickness of one-quarter inch.

New Welding Rod

A new welding rod, known as Oxweld No. 32 C.M.S. Steel Welding Rod, has been developed primarily for insuring uniformly high-quality welds in high-strength pipe welded by the multi-flame Lindeweld process.

One of the outstanding characteristics of this rod is its resistance to overheating in the molten state. Because of this, the rod is particularly suitable for use with the four- and six-flame tips. When applying this rod, the weld metal sets up more rapidly, making it easier to control the puddle. This makes greater welding speed possible and also effects a reduction in gas consumption per weld.

Standard practice in pipe line construction requires that sample "straps" of welded pipe, when subjected to a pulling test, break in the pipe wall and not in the weld. No. 32 rod provides the increased tensile strength needed to assure breakage in the pipe wall, when welds made in the higher strength pipe now in use are so tested. It develops an average tensile strength of 10,000 to 12,000 pounds per square inch greater than rods previously used for pipe welding. The ductility of welds made with this new rod is sufficient to meet any requirements.

All-Bell-Hole Method

Before discussing the one-third roll method of pipe line construction, it might be well to review briefly the all-bell-hole method which has been employed quite extensively during the past two years. This method consists of assembling the line, a length at a time, and making all welds in position. This method eliminates the usual line-up and firing-line gangs, and the bending or tie-in gang handle sections 40 feet long instead of the usual 200 feet. This method also eliminates dollies and other devices for rolling pipe.

The procedure usually followed is to line up the pipe on skids over the ditch, after which the joints are tack-welded and then welded without turning the pipe. Bends are made in various ways, depending on the equipment available. Besides the tacker, from three to six or more operators do the bell-hole welding, the number depending on the speed with which the pipe is lined up.

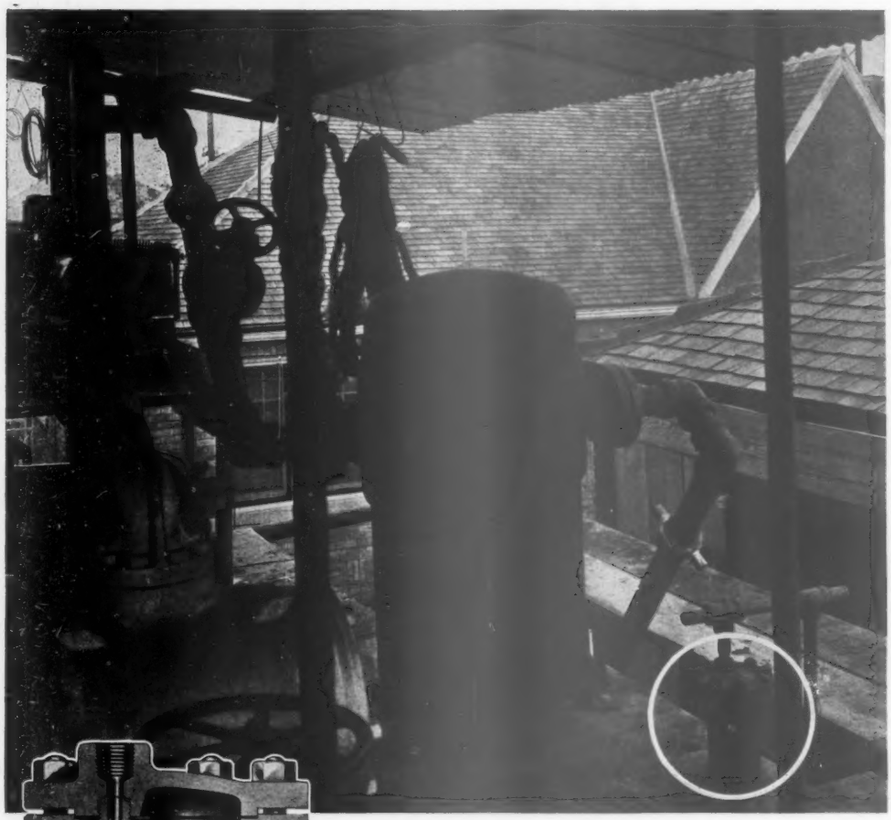
One-Third Roll Method

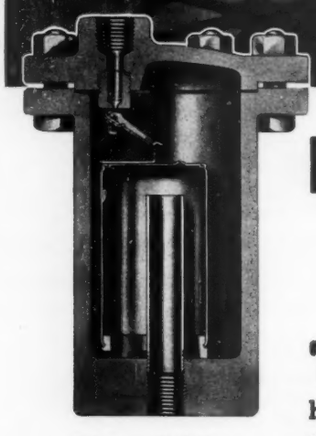
The one-third roll method of pipe line construction, which has been in use only during the past year, combines most of the desirable features of the all-bell-hole method with certain additional advantages.

Briefly, the pipe joints are lined up and tack-welded on skids over the ditch in strings from 280 to 2,000 feet in length. A crew of operators first weld the top two-thirds of each joint. The weld is started at the 12 o'clock position and carried down to the 4 o'clock position on one side, then from the 12 o'clock to the 8 o'clock position on the opposite side. As soon as the string is finished, this first gang of operators moves up to the next string, keeping as close to the line-up gang as possible.

When the top two-thirds of a string is welded,

*Presented before annual meeting, American Gas Association, at New Orleans, May 9-12.





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the entire string is rolled one-third of a revolution. This brings the bottom unwelded third of the joint to a top position accessible for welding. The second gang of operators, half the number of the first gang, then weld the remaining one-third of each joint in the string. There is one overhead weld to make on each string where it is tied into the completed line. The lowering-in or paint gang lines up these final bell-hole welds, which eliminates the necessity of a bell-hole lining-up crew.

This method is very flexible and makes possible the use of one to eight welding operators in a gang, without loss of efficiency. The number of operators is determined by the desired daily footage of finished pipe. Dollies are eliminated, and the number of skids is decreased as high skidding is not necessary. Also, this method eliminates one complete gang, known as the swing or tie-in line-up gang.

Weld quality is improved for a number of reasons. The pipe is never in motion while a weld is being made, thus eliminating strains that might otherwise result. Also, since the pipe is not in motion, the chances of pin holes resulting from cold laps or slag being trapped in the weld metal are decreased. Finally, the one-third roll method eliminates the most difficult part of a bell-hole weld—overhead welding the bottom third section of the joint.

Results on High-Pressure Gas Line

In October and November, 1937, a southwestern natural gas company operating hundreds of miles of high-pressure gas lines installed a high-pressure, 16-inch line using the new four-flame tips and high-strength welding rod. The results obtained on this line should prove interesting as an indication of the greater speeds possible with the new rod and tips.

The line was 20 miles in length and was completed in 27 working days. The all-bell-hole method was used on the first half of the line and the one-third roll method on the latter half. Although there was no appreciable difference in speeds and costs between the two methods, the one-third roll method appeared to give a better quality of workmanship. It has since been adopted by this company as the standard method of pipe line construction, and has been used successfully on recently completed 6-, 8-, and 12-inch lines.

On the 16-inch pipe with ¼-inch wall thickness, operators easily averaged 33 welds per nine-hour day, with individual daily production as high as 45 welds in nine hours. An average of 21 cubic feet of oxygen, 21 cubic feet of acetylene, and 1 pound of rod was used for each weld.

Since its completion, this line has been in service carrying gas pressures in excess of 500 pounds per square inch. It has already gone through the coldest part of the year carrying peak loads without developing any trouble.

Welding Speeds and Material Consumption

The figures for welding speeds and material consumption in the accompanying table are typical of what may be expected on a well-organized pipe line job using the all-bell-hole or one-third roll method of construction, four-flame bell-hole tips, and Oxweld No. 32 C.M.S. rod.

These figures include data for only the actual welding operation. The time and material consumed in tack-welding are usually figured as part of the line-up cost and are not included.

Summary

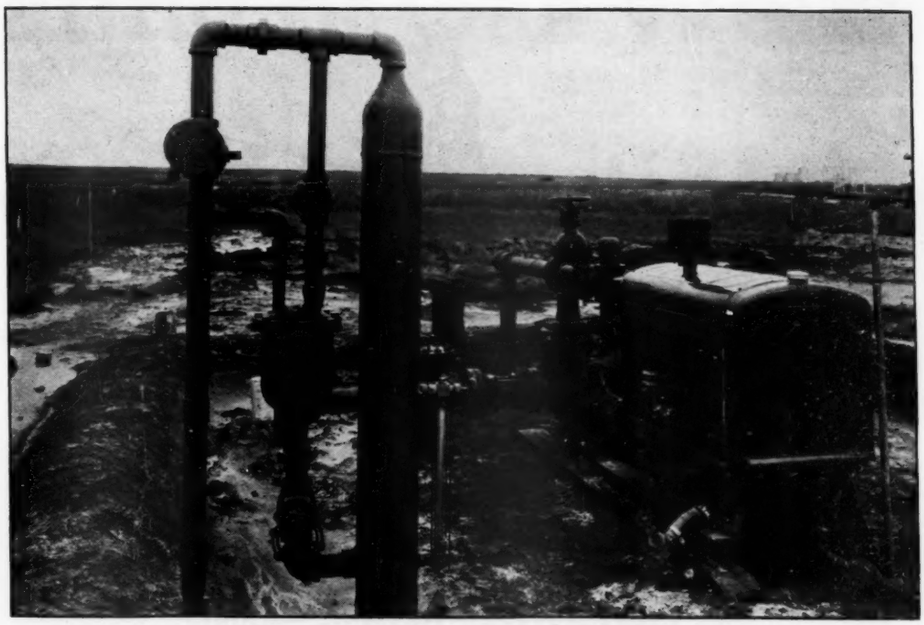
Multi-flame bell-hole tips and a new welding rod represent perhaps the most outstanding contribution to the oxyacetylene welding of overland pipe lines. Their use makes possible phenomenally fast welding speeds, high quality welds at minimum cost, and simplicity and flexibility of operation. With the new tips and rod, it is now possible to realize all the advantages of the all-bell-hole or one-third roll methods of pipe line construction.

OPERATING IDEAS

Portable Gas Regulator

In the Oklahoma City field, due to paraffin and sand conditions, it is necessary that rod and tubing be pulled frequently and the well cleaned out. To operate his clean-out equipment one well-servicing contractor has

designed a portable regulator and volume tank for natural gas taken direct from wells. The unit consists of a piece of 12-inch pipe closed at both ends with a piece of boiler steel welded to the bottom to serve as a base. Two outlets are provided at the top of the tank to which the regulator and gas lines are connected. High-pressure rubber hose serve as connections to the well and from the tank to the engine, thus adding to the portability and compactness of the unit.



Pump Primer for Rotary Pipe Line Pump

Rotary pumps used in pipe line service often lose their suction and require priming when the pump is placed in operation. One pipe line company operating on the Gulf Coast uses rotary pumps in its gathering station, and as these stations were operated only a few hours daily, they required some system of priming when the unit was put in operation each day. The result is the hookup shown in the accompanying photograph. It consists of a vertical closed pipe, acting as a reservoir, and the necessary valves and fittings for changing the oil flow. It is very simple and will operate by opening one valve which allows a quantity of oil to gravitate to the pump, thus enabling it to pick-up suction. Each day the operator fills the tank to the proper level, allowing sufficient fluid for this operation.

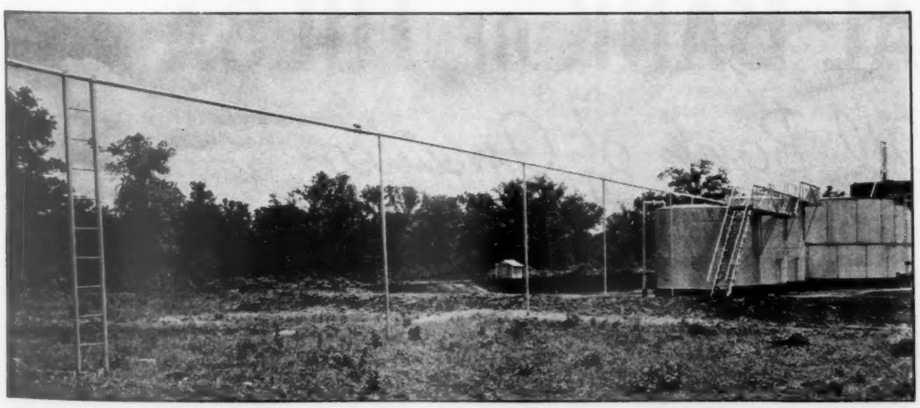
Container for Communications

Mounted on a post at the well nearest the highway, with the screw top fastened to a scantling within an 8-inch pipe stand, a quart jar serves as convenient and weather-proof container for run tickets and other written communications between lease switcher and pipe line gauger. This saves each unnecessary stops and eliminates the possi-

bility of lost tickets or the equally useless water-soaked ones. The glass jar is visible from the lease "dog-house" and from the highway, and any papers placed within it are easily visible to either man without a trip to the well site. By using an ordinary jar rubber the holder is made rain-tight.

Ladder Serves as Brace on Battery Vent Line

In order to permit the gauger to inspect the relief valve at the end of the vent line on a tank battery in the Cayuga field of Eastern Texas, one company has constructed the safe and strongly built ladder shown here. The ladder serves as the last brace in the vent line thus eliminating that cost, as well as providing a safe and permanent means of reaching the valve.



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Acid Treating of Gas Wells to Increase Production

By M. E. CHAPMAN
Chemical Process Co., Inc.*

The use of acid to increase production of oil and gas wells has become a well established practice throughout the oil and gas industry. The acidizing of calcareous formations to stimulate natural gas recovery has not become nearly so wide spread as the acidizing of oil wells. Acid treating of gas wells has been largely confined to portions of Kentucky, North Louisiana, the Panhandle of Texas and the Hugoton gas area of Kansas.

The principal purpose of acid treatment is to enlarge the drainage channels which lead to the well bore or to dissolve a calcareous barrier which may be blocking the ingress of flow into the drainage area of a well. Although acid may enlarge the cavity at the bottom of the well it is largely wasted unless it opens or enlarges channels leading into the well.

The treating of sandy limes has not been nearly so successful as the treating of limestones and dolomites. In sandy limes calcareous material ordinarily is present either as thin unproductive layers or as a cementing material. In the first case, acid attacks the lime only; consequently the porosity or permeability of the producing horizon is not increased. In the latter case the acid solution dissolves the cementing material which would cause the sand to slump. The effect of this action would actually restrict flow. If acid merely dissolves cementing material it will not appreciably aid in increasing production.

Hydrochloric acid of varying concentration is the principal agent used in treating wells. The products of the chemical action of hydrochloric acid on pure limestone and dolomite are largely water soluble residues and gas.

Treating Limestone Formations

Hydrochloric acids react with pure limestone, i.e., calcium carbonate, to form carbon dioxide, calcium chloride and water according to the following equation:

(1) $2HCl + CaCO_3 = CaCl_2 + CO_2 + H_2O$

The reaction with dolomite is

(2) $4HCl + CaMg(CO_3) = CaCl_2 + MgCl_2 + 2CO_2 + 2H_2O$

Commercial hydrochloric acid weighs about 9.476 pounds per gallon and contains 28 per cent or 2.653 pounds hydrogen chloride and 72 per cent or 6.823 pounds water. Water which is present in commercial hydrochloric acid does not enter into the chemical reaction of hydrochloric acid and limestone. By using one gallon of commercial hydrochloric acid and applying weights of each substance in equation No. 1 the following results are obtained:

(1a) 2.653 pounds HCl plus 6.823 pounds H_2O plus 3.64 pounds $CaCO_3$ equals 4.035 pounds $CaCl_2$ plus 1.602 pounds CO_2 plus 0.655 pounds new water plus 6.823 pounds original H_2O.

Weights involved in equation (2) are: 2.653 HCl plus 6.823 pounds H_2O plus 3.352 pounds $CaMg(CO_3)_2$ equals 1.736 pounds $MgCl_2$ plus 2.018 pounds $CaCl_2$ plus 1.602 pounds CO_2 plus 0.655 pound new H_2O plus 6.823 pounds original H_2O.

Calcium and magnesium chloride are readily soluble in water. At 32° F. the solubility of $CaCl_2$ in water is 59.2 per cent. The solubility of $MgCl_2$ is 52.5 per cent. With increase in temperature the solubility of these chlorides increases. At 140° F., which is the normal temperature at 4,000 feet the solubility of $CaCl_2$ in water is 136 per cent and of magnesium chloride is 66 per cent. In equation 1a the weight of $CaCl_2$ is 54 per cent of the weight of water present. In equation 2a $CaCl_2$ is 27 per cent of water and weight of $MgCl_2$ is 23.2 per cent of the water present, therefore water from 1 gallon or 28 per cent hydrochloric acid will dissolve all chlorides produced by the reaction of limestone and dolomite. In addition to the water which is present originally in acid, it is established practice to dilute acid used in treating wells. Commonly the treating solution consists of 50 per cent commercial hydrochloric acid and 50 per cent water. Accordingly, there is little danger that all the chlorides formed will not be dissolved. One thousand gallons of treating solution made up of 500 gallons of commercial hydrochloric acid (18° Baume) and 500 gallons of water will dissolve about 10 cubic feet of limestone.

However, virtually no limestone beds are pure limestone, they contain acid insoluble material such as shale, sand, chert, anhydrite, gypsum, iron and aluminum compounds and associated metal compounds. The chemical reaction of acid on calcareous formations is relatively simple, however the disposal or emitting of the residue products has become the subject of much study. Although it is important to introduce acid it is equally important to get out the resulting products.

Acid used in treating is neutralized in an exceedingly short time. Because of this feature, in order to obtain maximum results it is desirable to force the acid used in treating into the formation as rapidly as possible. After the acid has been forced into the producing formation the standard procedure now is to immediately reverse the flow of the treating fluid. During the early days of acidizing, wells were shut in for 48 to 72 hours awaiting chemical reaction. Generally, the shut-in period has been reduced and it is the usual practice now to reverse the wells within a few minutes after the acid has been displaced into the producing horizon.

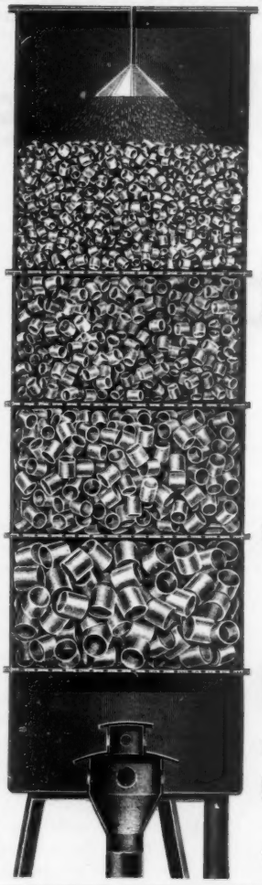
As previously mentioned, sand, shale and other materials occur as partings, or are distributed through the limestone matrix. When the limestone or dolomite is dissolved by the action of acids these insoluble particles may remain to interfere with the flow. In addition to the desirable removal of the products mentioned the reversal of direction of flow, after acid has partially completed its solution work, allows the acid to work while flowing both ways. This procedure permits a dissolving action as acid is entering the formation and favors an enlarging of drainage channels upon reversal. A small amount of unspent acid can do little good if allowed to remain widely spread in the drainage area of a well. Further, there is an economical justification for this procedure, in that operators are enabled to place their wells on production much sooner.

Acid begins to neutralize immediately upon coming into contact with calcareous materials, accordingly it is desirable to force the acid back into the producing zone of a well at a rapid rate. If acid is forced into the formation at a slow rate the first portions of the acid are neutralized and consequently a chemically inert fluid is being forced back into the drainage channels of the well. In recognition of these facts treating companies have designed high pressure, high volume pumps and are continually making improvements along mechanical lines. Although the pumps used in acid work are extremely efficient with regard to high volume and high pressure, operators generally favor the multiple pump hook-up. On large acid shots, two or more pumps are used to inject the acidulated fluid into the wells. Recently a well was treated in Young County, Tex., with 20,000 gallons of acid. This acid charge was followed with an oil load of 230 bbls. Ten pumps were connected and delivered fluid simultaneously. The over all treating time on this well for the acid and oil load was 59 minutes.

Method of Treating

During the early days of acid treating of gas wells it was the usual procedure to use compressors. Briefly, the method used was to introduce acid into the well at the casinghead and then the acid solution was driven into the producing formation by the use of compressed air or gas. Usually considerable time was required to treat a well in this manner. The latest innovation in the treating of gas wells is to use water behind the acid as a pressure medium. Only sufficient water is placed behind the acid to balance the bottom hole pressure and thereby drive the acid into the producing formation. In following this procedure the closed in, or rock pressure, of a well is taken and the volume of water to be used as a load is thereby calculated. Water exerts a pressure of 43.4 pounds per 100 feet in depth. As an example, if a closed in pressure of a well is 415 pounds a column of water 960 feet high is required to balance the bottom hole pressure. In 6-inch casing, 38 bbls. of water would be used. Where 8-inch casing is set approximately 50 bbls. of water would be pumped in behind the acid charge where

*Presented before meeting of American Gas Association at New Orleans, May 9-12.



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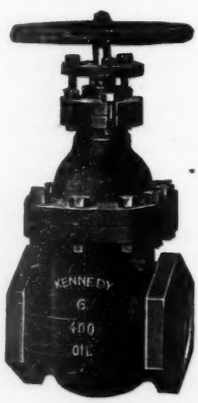

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the shut-in pressure is 415 pounds. By using this method acid is driven into the formation and fresh water does not come in contact with the exposed formations below the casing seat. Although the water load is in immediate contact with the treating solution very little mixing takes place. Because of the high pumping rate the acid solution and the water load are pumped down the casing in a fairly solid column. Samples have been taken of the fluids in wells treated in this manner and the mixing zone has been found to extend for about 8 feet. Part of the acid which is found at the bottom of the water column would be acid which clings to the casing while that fluid is being pumped into the well.

During treating three (3) or four (4) pumping units are used. Connections are arranged so that all the pumping units will simultaneously deliver the treating solution and subsequently the water load. When wells are treated by this method a bailing or swabbing unit is stationed at the well. The baller or swab is run following the treatment and sufficient water is taken from the top of the water column to unbalance the bottom hole pressure. Usually one pull with the swab is sufficient. The wells are then allowed to flow into the air and clear themselves of remainder of water and the spent treating solution. The rapidity of this type of treatment apparently accounts for the successful results which have been obtained.

By using this method a well was treated in the Panhandle of Texas in 23 minutes, using 5,000 gallons of acid followed with a water load of 53 bbls. The well was allowed to be shut in 20 minutes awaiting chemical reaction. Before treating, the well had a rated potential of 16,900,000 cubic feet of gas per day. After treating, the well gauged 65,000,000 cubic feet. Samples of the spent acid solution following the treatment indicated that the acid was completely neutralized.

In a number of the limestone and dolomite gas producing areas much red rock and shale is encountered between the pay zones. This material has a tendency to cave or slough upon contact with aqueous solutions. The longer calcareous shale formations are exposed to moisture the greater amount of caving there will be, accordingly time is an essential factor in treating.

In the summary acid treating of gas wells produces better results if the acidulated mixture is forced into the producing formation at a rapid rate and better results are obtained if the wells are quickly reversed and the closed-in period reduced even though some unspent acid may be brought to the surface and wasted.

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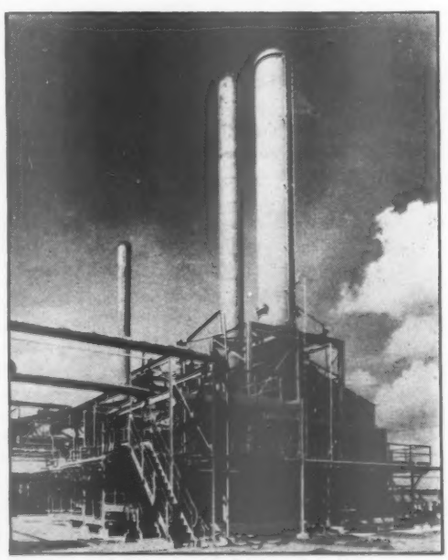

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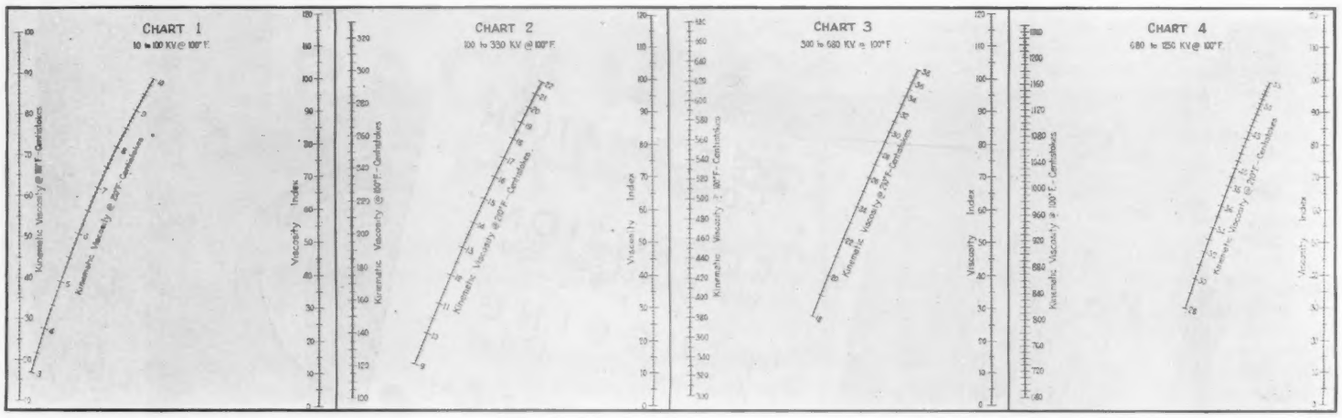


Fig. 1—Charts for calculating the viscosity index from kinematic viscosities at 210° and 100° F.

Calculation of Viscosity Index Aided by Comparable Charts

By R. E. HERSH and M. R. FENSKE
Pennsylvania State College

The usefulness and convenience of the viscosity index for expressing the viscosity-temperature characteristics of lubricating oils has been recognized for some time by petroleum technologists. Some confusion, however, has been experienced in comparing reported values of the viscosity index due to the several methods proposed for its calculation[1,2,3] and to the fact that it is common practice to determine the kinematic viscosity of at least the light oils. The choice of conversion methods, therefore, introduces some differences in the final values obtained for the viscosity index.

In order to eliminate the necessity of converting kinematic viscosities to Saybolt seconds a system was developed from considerable experimental data for the calculation of the viscosity index directly from the kinematic viscosities.[4] Using the kinematic viscosity measurements at 100° and 210° F. of a number of oil samples mathematical relations were derived for the 100-viscosity index and the 0-viscosity index type reference oils. The equations are as follows:

For 100-viscosity index oils,

$$KV_{100} = 2.808 \left[KV_{210} - \frac{0.500}{(KV_{210})^{1.133}} \right]^{1.5}$$

and for 0-viscosity index oils,

$$KV_{100} = 2.450 \left[KV_{210} - \frac{0.213}{(KV_{210})^{1.068}} \right]^{1.5}$$

Where

KV_{100} = kinematic viscosity at 100° F., in centistokes.

KV_{210} = kinematic viscosity at 210° F., in centistokes.

These equations can be used for the calculation of the viscosity index, the 100° F. viscosities of the reference oils being obtained by solving the equations with the substitution of the 210° F. viscosity, or tables covering any range in viscosity desired can be computed for convenient reference.

Figure 1 shows a nomograph constructed from such a table for estimating the viscosity index of oils within the viscosity range of 3 to 55 centistokes at 210° F. or from 10 to 1,250 centistokes at 100° F. With such charts or tables the kinematic viscosity index can be readily calculated in the fundamental viscosity units that are usually measured directly where accuracy is desired, thus increasing the precision of the calculated value.

Although kinematic viscosity units offer distinct advantages in accuracy, reproducibility and simplicity, the petroleum industry will continue to specify and think in terms of Saybolt seconds, or other arbitrary units such as Redwood or Engler viscosity. Usually some relation exists between these arbitrary units and the kinematic viscosity and, as it has been suggested[5], these arbitrary scales could be conveniently defined in terms of kinematic viscosity, thus eliminating the necessity of maintaining "master" tubes and simplifying the

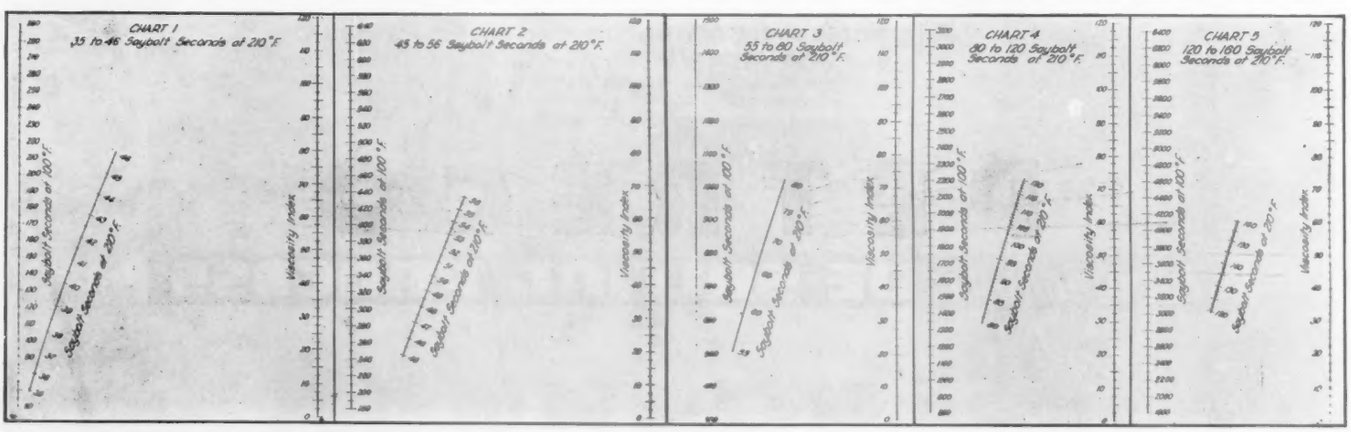
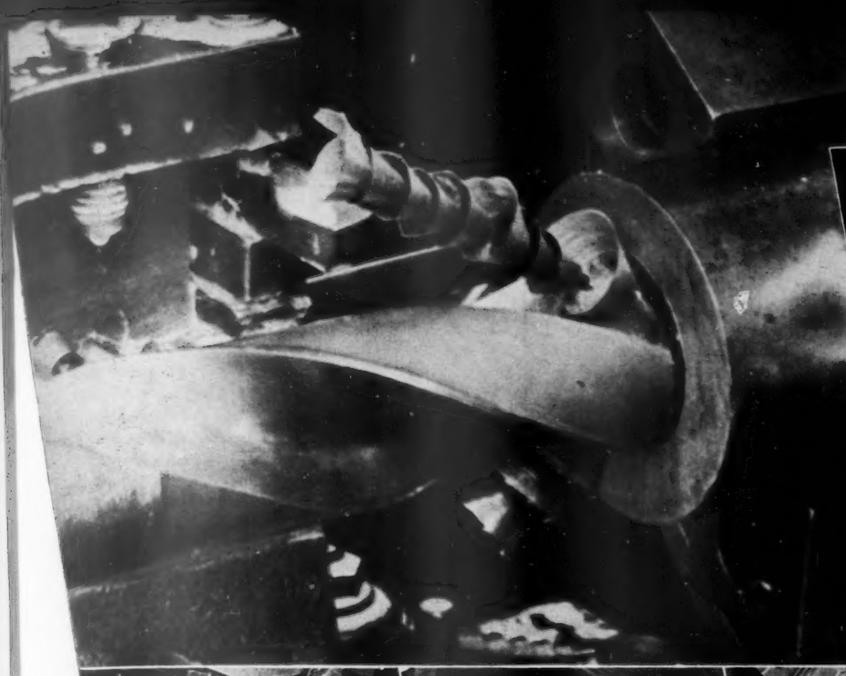


CHART 1
35 to 46 Saybolt Seconds at 210°F.
CHART 2
45 to 56 Saybolt Seconds at 210°F.
CHART 3
55 to 80 Saybolt Seconds at 210°F.
CHART 4
80 to 120 Saybolt Seconds at 210°F.
CHART 5
120 to 160 Saybolt Seconds at 210°F.

Fig. 2—Charts for calculating the viscosity index from the Saybolt Universal viscosity at 210° and 100° F.



2. Blanks for Axelson collars, cut to proper length, are drilled to semi-finish bore size on turret lathes.

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4. Collars are next counter-bored to finished diameter for jacket threads and checked for size.

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5. The face of the collars which clamps against the ends of the liners is finished to a smooth, flat surface.

6. Axelson multiple thread circular chasers are used to produce jacket threads in one end of the collars.

7. The operator gages each finished jacket thread for proper fit, after which inspector checks operator's gaging.

8. Collar is screwed on master chuck to be faced and radius machined on other end. Master chuck insures alignment of ends.

9. Next, tubing end is rough and finish bored. Axelson multiple thread circular chasers produce tubing threads.

10. Operator checks tubing threads after which the inspector verifies with plug gage that threads are correct.

11. Inspectors next give final check to other collar dimensions, i.e., length of threads, over-all length, etc.

12. Each collar is marked for identification with part number, size and other coding.

13. Axelson collars are stored in steel shelving after having been washed and coated with rust preventive solution.

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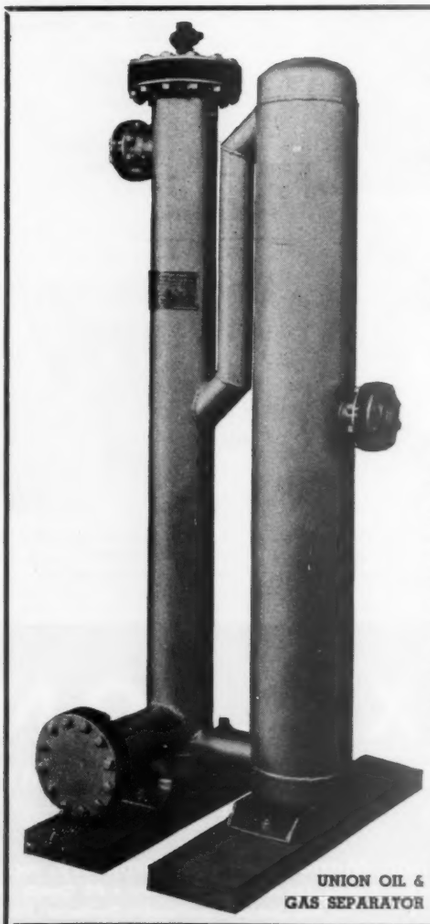

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calibration procedure. Where such conversion relations are definitely established, it is a simple matter to construct viscosity index tables or nomographs expressed in the more popular units. The recent adoption of the tentative method for the conversion of kinematic viscosity to Saybolt Universal viscosity (A.S.T.M. designation D446-37T) based on the average of five available conversions and additional cooperative data[6] is an important and valuable step in promoting uniformity of reported physical properties. Using this method of conversion of units a nomograph for calculating the viscosity index from Saybolt viscosities was constructed similarly to the kinematic viscosity index charts. The Saybolt chart is shown in Figure 2. It follows that viscosity indexes calculated either from kinematic or Saybolt units should agree with each other. Therefore, values of viscosity index reported by research laboratories where kinematic viscosities are determined could be directly compared to those obtained in plant control or sales work where Saybolt seconds are employed; provided that the Saybolt instrument used to measure the viscosities had a zero correction or the proper corrections were applied.

Obviously, a comparable system such as the one described can be constructed in the reverse direction, that is, starting with viscosity index tables expressed in Saybolt seconds and using a standard conversion to obtain the kinematic viscosity. This has been done for certain special cases[7], but it was thought that greater accuracy and uniformity would be attained if the basis for calculations were kept in fundamental units as in the case of the actual viscosity measurements.

Acknowledgment is made to R. J. Pfister for conversion of kinematic viscosities to Saybolt seconds required for the construction of Figure 2.

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Tax Increases Curtail Travel

Loss of 921,000,000 miles of highway travel and loss of retail trade to the extent of millions of dollars are estimated to have been the direct result of increased gasoline tax rates in Minnesota, New York, Rhode Island, and West Virginia in 1937. In these four states where gasoline tax rates were increased, it is reported by the American petroleum industries committee, highway travel as measured by motor-fuel consumption failed to keep pace with that in other states. Losses is trade also were suffered by retail outlets catering to highway travel, including service stations, garages, automotive supply stores, restaurants, hotels, tourist camps, and other local business enterprises.

Deferred Registration Increasing

Adoption of deferred registration by New Jersey leaves only 10 states which now have January 1 as a rigid date for the registration of motor vehicles. All the other 38 states either have permanent registration dates later than the first of the year, or have laws which permit periods of grace to be granted to motorists. Virginia not only has an April 1 date of registration, but gives motorists 15 days grace in addition. The recently adopted law in New Jersey making April 1 as the date of registration passed the assembly by a vote of 53 to 0 and the senate by 13 to 0.

Combination Gas Dehydration and Desulfurization Plant

By T. S. BACON
Lone Star Gas Co.*

The natural gas industry, during its early years, paid very little attention to gas purification problems. Dry natural gas was generally found to be satisfactory material for pipe line transmission in its raw state, if it were free of hydrogen sulfide. Oil, distillate, and water that settled out in the transmission lines were removed from the lines through drips and pipe line freeze-ups were regarded as an unavoidable evil in cold weather. Large quantities of sweet gas are still available and it is only infrequently that sour gas is desulfurized to be used for transmission by pipe line to domestic and industrial consumers. However, each year new installations are made for sweetening sour gas before this gas enters distribution systems. And each year new hydration plants are being installed to remove water vapor from natural gas.

A recent problem of desulfurization of natural gas resulted in the design of an unusual plant for removing water vapor and hydrogen sulfide from natural gas in a single step. The Northern Natural Gas Co. was taking gas from a field in Rush County, Kansas. The field pressure was in the vicinity of 900 pounds per square inch and the line pressure ranged from 350 to 450 pounds per square inch, hence water condensation in this particular line was negligible. The gas entering the line was sweet when the line was laid, but many wells in the field have since become sour, and it recently became necessary to install a desulfurization plant in this field. A survey of the available desulfurization processes was made and it was found that any known process would add appreciable quantities of water vapor to the treated gas. In fact, sufficient water vapor would be added to the gas to cause condensation of water in the transmission lines leaving the desulfurization plant. The Northern Natural Gas Co. had already become aware of the advantage of gas dehydration, and were installing two hydration plants at other points on their system at that time. It was, therefore, believed imperative to install a dehydration plant after the desulfurization plant. In this particular case, the cost of dehydration would have to be added to the cost of desulfurization, as the operation of the sulfur-removal plant would make necessary the operation of the dehydration plant.

The benefits that may be derived from gas dehydration are particularly apparent on the Northern Natural Gas Co. system. Also the degree of dehydration that must be obtained for full protection is unusually high on this system, as gas is transported from the warm climate of the Texas Panhandle to the cold climate of Minnesota. The frost depth on the northern end of the system frequently drops below the pipe line depth, which requires that the dew-point of the gas in the northern end of the system be below 32° F. to prevent freeze-ups. In addition, the gas distributed in the north end of the system contains traces of hydrogen sulfide and of oxygen, and it is probable that internal corrosion of the transmission lines would occur if liquid water was also present. Partial dehydration of the gas entering the system in Texas, by the use of calcium chloride solution or by cooling to temperatures just above the temperatures at which hydrates form, will not remove sufficient water from the gas to prevent condensation, in the north end of the system under all conditions, but it is probable that the dew-point could be lowered sufficiently by the use of refrigerated calcium chloride brine.

A simpler dehydration process, using diethylene glycol as the water absorbing medium, has proved to be very economical in operation and at the same time has lowered the dew-point of the gas by 40° F. or more. The Northern Natural Gas Co. pioneered the commercial use of diethylene glycol for gas dehydration, and are well satisfied with the results obtained.

A study of the cost factors and chemical factors involved indicated that dehydration and desulfurization possibly could be accomplished in a single plant in the Rush County field. The agent for hydrogen sulfide removal would be physically mixed with the agent for dehydration instead of with water as is the normal practice in desulfurization plants. The resulting liquid mixture would then be brought in contact with the gas to be purified in a conventional gas scrubber. The fouled solution leaving the scrubber would be free of the absorbed water vapor and hydrogen sulfide by boiling in a steamheated still, and the regenerated liquid leaving the still would be cooled and returned to the absorber.

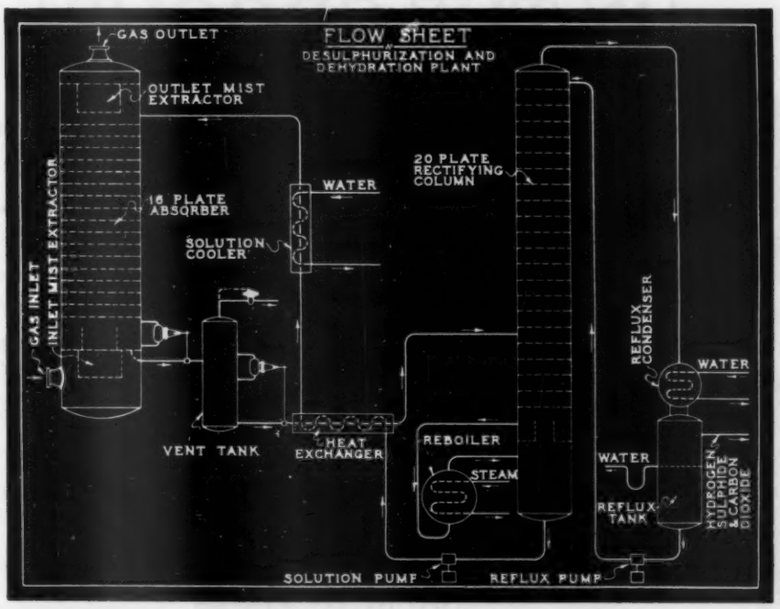


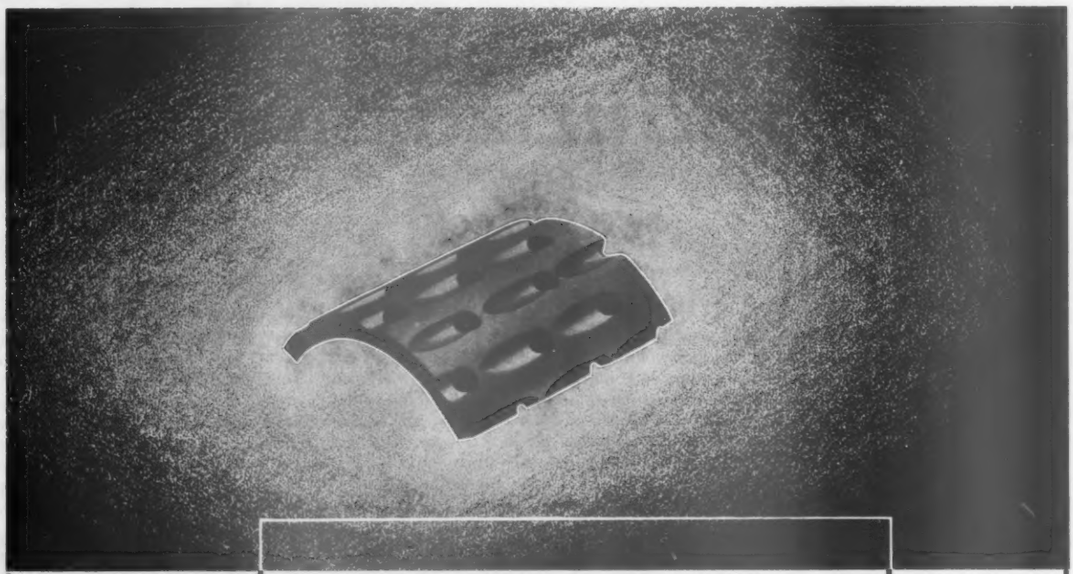
Fig. 1—Desulfurization-dehydration plant

Several possible combinations of reagents apparently could be used in such a plant. Liquids used for hydrogen sulfide absorption include soda-ash solutions, sodium phenolate solution, and various amines. Liquids used for gas dehydration include calcium chloride solution, glycerine, and diethylene glycol. Some of the advantages of diethylene glycol as a dehydration agent have already been indicated. The amines are miscible with diethylene glycol in all proportions, and also are hygroscopic, so the possibilities of an amine-glycol combination were carefully considered. It was found that an amine-glycol solution containing about 20 per cent of water would absorb hydrogen sulfide readily, but was fairly viscous at atmospheric temperatures. The high viscosity of the solution would probably affect absorption of hydrogen sulfide and water vapor adversely and would decrease the heat transfer. But these adverse factors could be compensated for by proper design of equipment.

The possibility of the thermal decomposition of the amine in the reactivation still appeared to present a more difficult problem. The amines as a class are more or less unstable at high temperatures. Previous commercial use of amines for gas purification had involved heating the amine to about 220° F. A temperature of about 300° F. is maintained in the reboilers of the reactivation stills in the glycol dehydration plants. Laboratory tests showed that a commercial mixture of amines decomposed at a measurable rate when a solution of the amines in diethylene glycol was maintained at a temperature of 260° F. This question of thermal decomposition of the amine appeared to be of great importance, due to the expense of replacing the decomposed amine, and also due to probable loss

(Continued on Page 116)

*Presented before meeting American Gas Association, at New Orleans, May 9-12.



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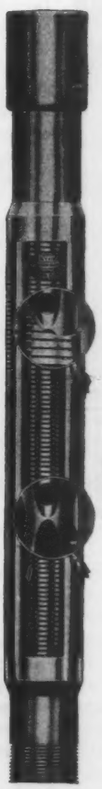

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Electric Power Playing Major Role in California Refinery Expansion

By T. P. SANDERS

For nearly a year refinery construction has progressed at "boom" proportions in California and it now becomes apparent that this work is to be maintained at its rapid pace during the current year. Plans disclosed by the major companies indicate that there will be few refineries in Southern California which will not undergo material changes during the coming months. These changes will represent modernization in some cases, enlargement in others, and will include many types of equipment and design.

However, one feature is common to nearly all of the refinery expansion plans. This is the widespread acceptance of electric motors for driving pumps, compressors, and fans. Selection of the type of power has always been an essential consideration in refinery construction work because of the exacting service, which requires freedom from interruptions and elimination of fire hazard. Comparatively recent developments in refining practice and in design of electrical equipment have enhanced the value of electric power to the refiner.

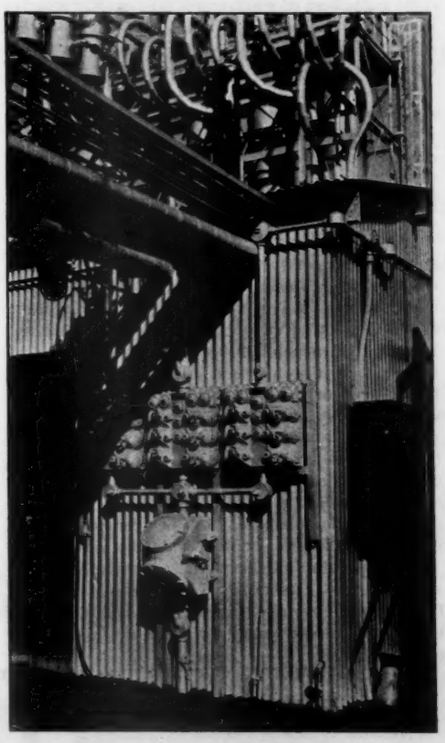
The polymerization process has provided a more profitable outlet for refinery gases, which were formerly burned as boiler fuel. Since gas is far less plentiful in California than in the Mid-Continent, it was to be expected that California refiners would act quickly upon this consideration. With the perfection of explosion-proof motors and switches, the use of electrical equipment at the most hazardous locations has become practical. Plans for California refinery additions clearly show the great progress in explosion-proof equipment.

The most outstanding example of electrical operation of refining equipment is seen in Richfield Oil Corp. plans for electrification of their new cracking units now under construction. This will be the largest single electrical lay-out ever undertaken in a refinery. Sixty-seven new electric motors will be installed, and two switch boards (each 105 feet long) will be required to accommodate the electrical controls. But disregarding size, there is much to recommend the carefully planned electrical system. Several entirely new features are included, such as the 1,000 hp. specially designed charge-pump motors and the provisions made for continuous power service.

In using electricity in a refinery no other consideration assumes so much importance as uninterrupted service. At the Richfield plant the first step was taken toward insuring continuous service by the power concern. Power lines have been run from two different directions to converge at the refinery. Both lines are owned by Southern California Edison Co., and each is capable of assuming the entire connected load. One line has as its source the hydro-electric plants in the Big Creek district, while the other takes power from the gas-fired, steam-operated plant at Long Beach. Both of these systems have good records for freedom from interruptions.

Nine 1,000 kva. transformers will be used outside of the plant to step the voltage down from 11,500 to 2,300 volts, thus the capacity of the equipment will be approximately 12,000 hp. Inside the plant there will be two circuits. All motors rated 50 hp. or more will operate on the 2,300-volt circuit, while the smaller motors will operate at 440 volts. Steam turbines will serve as standby equipment for all important pump motors. Since it is roughly estimated that $10,000 is lost for every day off stream, safeguards for continuous service are considered necessary.

Synchronous motors will be used in the compressor plant and on the cooling-water pumps and the fans. A total connected load of 2,800 hp. will be in synchronous motors. This will bring about a unity power factor on the system. It is customary on all electrical systems in refineries to use some synchronous motors instead of all induction motors as a more favorable power factor is obtained in this way.



Explosion-proof lighting switches at Wilshire's Norwalk refinery. Floodlights of 10,000 watts are used for outside lighting at this plant, while explosion-proof fixtures are used for inside lighting

Perhaps the most unusual feature to be introduced at the Watson refinery will be the 1,000 hp. motors, one of which will be used for the charge pump of each of the two new cracking units. They will be the first motors of their kind built for any type of service, and they represent distinct departure from usual practice, both in design and in application. At present they are being tested at General Electric Co.'s Schenectady factory.

In the past, when electric motors have been used to drive hot-oil charge pumps, it was usual practice to use a fire wall between pump and motor. Motors of the explosion-proof type have generally been limited to sizes smaller than 350 hp. since cooling becomes a problem as size increases. In order to avoid use of a fire wall at the Richfield plant it was necessary to design an explosion-proof motor much larger than any available.

Cooling of the 1,000-hp. motors is to be accomplished with an inert gas, carbon dioxide in this case, and the gas will be cooled with water. Carbon dioxide will be supplied by steel bottles from which it will be conducted to the fully-enclosed motor. After passing over the hot surfaces in the motor, the inert gas will circulate through a fin-type cooler where the ultimate cooling will be accomplished with a supply of water. Through a closed system the gas will return to the motor. Pressure of the gas in the motor and cooling system will be maintained slightly above atmospheric with the rate of escape of gas around the shaft determining the rate of supply from the pressure bottle.

While the 1,000-hp. motors to be used in the Richfield plant have not been certified as explosion-proof, the fact that they will operate in inert gas is believed to exclude possibility of explosion. These motors are 2-pole induction type, and will operate at 3,000 r.p.m., driving Ingersoll-Rand centrifugal pumps. Lubrication of the motors is an interesting feature; each will use two 1-hp. motors to operate lubricating-oil pumps. It is apparent that unfailing lubrication will be necessary on these high-speed giant motors, which will weigh 16,000 pounds net.

The steam turbines which will act as standby units for the large charge-pump motors will be automatically controlled. If trouble develops in the motor or electrical circuit, the steam turbine will be started automatically to pick up the pump load as it is dropped by the electric motor. This arrangement is necessary because if the charge pump stops for a fraction of a minute, the cracking furnace will be automatically discharged to avoid explosion. Since the contents would be wasted in case the heaters were discharged, a considerable loss would result from a charge-pump shutdown.

A 440-volt turbo-generator will be used to supply electricity for lighting and for other uses in case of a power failure. Many of the valves in the refinery will be electric-motor operated, and a source of power must be provided to insure a means of opening and closing these at all times. Also, the small lubricating motors on the charge motors must operate even though the power is off of the charge motors. This is true because the standby steam turbines will drive the charge pumps through the motor shafts. While the pumps will not be driven at normal operating speed by the turbines, lubrication of the shaft bearings can-

not be interrupted. The turbo-generator will start automatically when the power supply fails. A solenoid trip valve will accomplish this by opening the turbines' steam supply line at the psychological moment. The steam equipment is designed with sufficient capacity to keep the refinery operating at a reduced rate until the power is restored.

Between 60,000 and 70,000 gallons of oil will be handled hourly by the motor-driven charge pumps. Temperatures will be as high as 650 degrees, and the charge pressure will be in the neighborhood of 1,000 pounds. All pump parts which contact the oil will be made of alloy steel.

Comparison of Results

Another example of modern use of electrical equipment is seen at Texas Co. Watson refinery where plans are complete for erection of a Stratcold treating plant. This installation was started about April 15 and will require 6 months for completion at a cost of approximately $250,000. The capacity will be 5,000 bbls. per day. The plant will be of the settler type instead of the more common centrifuge type.

Synchronous motors will be used for the compressors, and since this type of motor cannot be made explosion-proof in itself at any reasonable expense, other arrangements have been made. The slip rings of each motor are enclosed and a separate motor-driven blower will be used for each set of rings. The blowers will draw clean air from a safe distance away from the danger zone and will maintain a positive pressure about the rings with this gas-free air.

The same method, on a more elaborate scale is to be used in preventing explosions from the switches and exciters for the synchronous motors. All switches and exciters will be installed in an isolated room made of reinforced concrete walls and ceiling, and equipped with fire doors. Blowers will take gas-free air from a safe source to maintain a small pressure in the entire room.

Due to the construction of the treating plant at the Texas Co. Watson refinery, the connected electrical load will be increased by 625 hp. Proposed work at other Los Angeles basin refineries is expected to increase the refinery distribution of power greatly. Crude and cracking facilities installed at General Petroleum Corp. Torrance refinery will increase the connected load by 2,600 hp., and proposed work at Tide Water Associated Oil Co. Watson refinery is expected to increase the connected load by 350 hp. It is also rumored that new cracking facilities proposed at El Segundo will result in 2,200 hp. additional connected load. An experimental unit just completed at Shell's Dominguez refinery will use a small quantity of electric power. Other proposed work includes additions to a Wilmington refinery.

COMBINATION PLANT

(Continued from Page 113)

of plant efficiency caused by deposition of the decomposition products on the heating surfaces in the plant.

The possibility of the use of a sodium phenolate-diethylene glycol mixture was considered. This mixture should have several advantages, including high absorption of hydrogen sulfide per gallon of solution, high thermal stability, and no affinity for carbon dioxide. Unfortunately, rough laboratory tests, that have since been proved to be in error, indicated excessive gum formation when the solution was heated. Tests on a larger scale have subsequently shown that gum formation does not occur under operating conditions, and that this combination would be successful in commercial operation. However, it was decided not to use this combination in the Rush County plant in view of the early experimental results.

Other tests indicated that a diethylene glycol-monoethanolamine mixture should be fairly stable at 260° F. Time did not permit any extensive experimental work on this mixture, but the plant was designed from the available data to use a diethylene glycol-monoethanolamine mixture. All plant units were designed where possible so they could be used either in a straight desulfurization plant or in a straight dehydration plant. Then in the event of failure of the combination plant, the apparatus could be utilized in the construction of conventional plants. However, much additional equipment would be required, and much additional expense would be involved, if it were found necessary to substitute a conventional desulfurization plant and a dehydration plant for the proposed combination plant. The flow sheet of the plant as built is shown in Figure 1. This plant has a designed capacity of 40,000,000 cubic feet per day at 400-500 pounds per square inch gauge pressure with 20 grains of hydrogen sulfide per 100 cubic feet of inlet gas.

It was estimated, prior to plant operation, that the treated gas would have a dew-point of 30-40° F., and would contain about 0.7-0.8 grains of hydrogen sulfide per 100 cubic feet. The plant was put in operation November 2, 1937, and has been operating practically continuously since that time. The dew-point of the treated gas has been determined as averaging about 0° F. and the hydrogen sulfide content of the gas has consistently been less than 0.2 grains per 100 cubic feet, even though the hydrogen sulfide content of the raw gas has run as high as 50 grains per 100 cubic feet instead of the maximum of 20 grains that was originally estimated. Operating data covering the first four months of operation show that 1,934,000,000 cubic feet of gas have been treated with a total glycol loss of 190 gallons, and a total amine loss of 30 gallons. On this basis, the cost of chemicals consumed per thousand cubic feet of gas treated is roughly a quarter of a mill. Steam and cooling water consumption are both lower than were anticipated, due to the elimination of reflux from the reactivation still. Power consumption also is low, as the solution rates do not exceed 25 gallons per minute on this plant. No operating difficulties have arisen to date, and there has been no evidence of excessive plant corrosion, or of gum deposits on the heating surfaces. Overall treating costs are largely affected by the actual life of the plant, and by the load factor at which the plant operates. Royalty payments must also be considered in this connection, as basic patents are held by Girdler Corp. on the use of amines for desulfurization of gas and other patents have been applied for. Estimates at present indicate that the total treating cost in this particular plant including depreciation, corrosion allowance, and maintenance will be about 1.5 cents per thousand cubic feet with an average annual load factor of 20 per cent of plant capacity. Table 1 shows plant operating data in some detail.

The circulating solution used contains 7-8 per cent monoethanolamine, 75-80 per cent diethylene glycol, and 12-16 per cent of water by volume.

The operation of the plant is automatic, as the solution rate is determined by the pump speed. Liquid level controllers on the liquid outlet from the absorbers and vent tank maintain a constant feed of spent solution to the still at a rate equal to the pumping rate. The base of the reactivation still serves as a surge tank, to equalize slight discrepancies between the solution rate to and from the still. No reflux is returned to the still under present operation. Condensate leaving the reflux condenser is accurately measured to give a check on dew-point determination, and the amine content of the condensate is periodically determined.

Texas Company Installing Motors

The results actually obtained by the plant, as listed above, were found to be far better than the estimated results. These favorable results have largely been obtained by the elimination of reflux from the reactivation still. Amine desulfurization plants have required reflux in the reactivation still to prevent excessive loss of amine in the vapors leaving the still. Glycol dehydration plants have used reflux in the reactivation still to prevent loss of glycol overhead. In the combination plant, hydrogen sulfide and carbon dioxide are liberated from the amine compound rapidly, and without sustained boiling of the solution. These liberated gases serve to reduce the partial pressure of water vapor over the solution in the still kettle, and hence assist in stripping water vapor from the solution. The still kettle temperature has been maintained at 260° F. consistently. Decomposition of the aminehydrogen sulfide compound is more rapid at this temperature than it is at the lower temperatures at which amine-water solutions are generally regenerated. The presence of the glycol may also assist in increasing the decomposition rate of this compound. Further, the presence of the glycol probably tends to reduce vaporization of the amine. However, plant records indicate that results obtained may be slightly affected by the relative amounts of acid gases and of water vapor that are liberated in the still.

The total elimination of reflux to the reactivation still reduces the amount of heat that must be applied to the still, and therefore increases the economy of plant operation. Analyses of the overhead vapors from the still show that the loss of amine and glycol in these vapors is very small. The small magnitude of this loss is shown definitely by the fact that only small amounts of glycol and amine are added to the plant as make-up. Thus, the use of the combination solution in a single plant, rather than the use of two separate solutions in two separate plants, enables superior operating results to be obtained at lower operating costs with reduced initial investment.

It appears that the amine-glycol combination may be useful for dehydrating sweet gas that contains some carbon dioxide where low dew-points are required. It also appears possible to effect economies in the desulfurization of sour gas by the use of the glycol-amine solution, even though dehydration of the gas is not required.

H. J. Carson, chief engineer of the Northern Natural Gas Co., assisted greatly in the design of this plant, and offered many helpful suggestions. The plant was erected under his supervision. Appreciation is also due D. B. Williams and J. M. Russ, of the Carbide and Carbon Chemicals Corp., for information on diethylene glycol, and for analyses of plant solutions.

TABLE NO. 1—OPERATING DATA FOR DEHYDRATION-DESULFURIZATION PLANT

	Nov. 1937	Dec. 1937	Jan. 1938	Feb. 1938
Gas treated (million cubic feet)	515.5	672.7	413.3	332.4
Gas pressure (pounds per square inch gauge)	402	396	392	389
Gas temperature (degrees F.)	58	52	49	47
Treated gas—dew-point (degrees F.)	4.7	0.0	0.4	0.0
Treated gas—hydrogen sulfide (grains per 100 cubic feet)	0.25	0.10	0.14	0.05
Raw gas—hydrogen sulfide (grains per 100 cubic feet)	23.4	25.7	13.3	20.0
Still kettle temperature (degrees F.)	260	260	260	260
Still pressure (pounds per square inch gauge)	5.0	5.0	5.0	4.7
Reflux to still (gallons per hour)	0	0	0	0
Glycol make-up (gallons)	10	80	50	50
Amine make-up (gallons)	0	0	25	5
Solution rate (gallons per minute)	19.6	23.0	17.7	11.1

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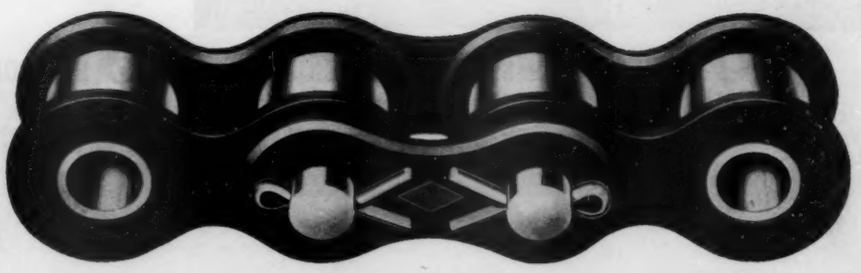

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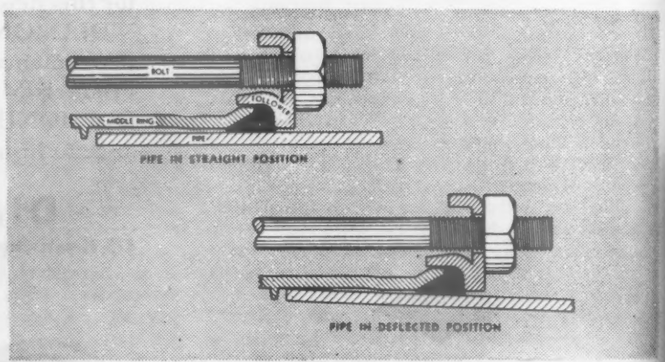

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DRESSER
PIPE COUPLINGS

PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Cooling Water For Internal Combustion Engines

A simple rule for calculating the volume of water needed for cooling internal combustion engine cylinders is to divide 480 by the difference between the inlet and outlet temperatures of the jacket water and the result will be expressed in gallons per horsepower hour. For instance:

Outlet temperature	150° F.
Inlet temperature	90° F.
	60° F.

$$\frac{480}{60} = 8 \text{ gallons per H.P. hour}$$

This formula has been derived from the more accurate and complete equation $Q = pH/(t_1-t_2)$, where Q = cooling water per H.P.-hr., lb.; t_1 = temperature of outlet water from engine jacket, °F.; t_2 = temperature of inlet water to engine jacket, °F.; p = percentage of total B.t.u. consumed per b.h.p. per hr.; H = B.t.u. consumed per b.h.p.-hr. (maximum for full load).

By inserting in the above formula, p = 0.40, H = 12,000, and $(t_1-t_2) = (150-90) = 60$, then $Q = (0.40\times12{,}000)/60 = 80$ lbs., or 9.6 gallons of cooling water needed per h.p.-hr.

It will be observed there is a difference of 1.6 gallons between the empirical and the more detailed formula, the difference between the weight of the American and British gallon. The American gallon = 231 cu. in. of water at 62° F. = 8.3356 lbs. and the British gallon = 277.274 cu. in. of water at 62° F. = 10 lbs. This is a difference of 20 per cent but in practice it will be found the empirical formula will serve quite satisfactorily.

Relation of Porosity to Permeability

Can you tell me the permeability of some sands now under secondary recovery production? Also what is considered the low and high permeability for a repressuring project? If you cannot answer these questions perhaps you can tell me where I may obtain some books on this subject.—V. E. S.

This is not a simple question to answer because the lower limits of permeability in repressured areas vary through a rather wide range. Much has been published on the subject of water-flooding and repressuring but it would be difficult for you to arrive at any conclusion as to the practicability of attempting to repressure your property from a study of the published data unless you have some laboratory work done upon cores from your producing formation.

In a rather exhaustive paper on "Some Physical Characteristics of Oil Sands" by G. H. Fancher, J. A. Lewis and K. B. Barnes presented before the Petroleum and Natural Gas Division of the Pennsylvania State College, this whole subject is reviewed and many tables of analysis of cores published.

After making a general review of these data the authors make this statement:

"The data emphasizes the fact that there is no direct and simple relation between porosity and permeability. This fact cannot be emphasized too strongly in view of the prevalent impression even among technical men and engineers that there is a relation or worse yet, that the two are equivalent. The sample of maximum porosity did not possess maximum permeability although it can be expected that a relatively large increase in effective porosity in many cases is accompanied by an increase in permeability of considerable magnitude. However, the reverse is frequently true, also. . . . It is felt by the authors that the permeability and porosity of a sample should be run both with and across the plane of bedding whenever possible because the 'effective' permeability of the sand, if use of such a term may be allowed for the moment, in a producing horizon undoubtedly is some resultant of both, due to the action of gravity and possibly other factors."

It would be possible to select a number of examples of porosity of sands repressured or flooded and also give the permeability of the same sample but this is not done because it would establish in your mind some figures which would not be correct for your particular problem.

Instead it is suggested you secure some representative cores of the producing formation you have in mind and then have them checked in a laboratory equipped to determine the characteristics of sands and from the report determine the possibility of repressuring on your property.

Enclosed you will find a bibliography on repressuring articles prepared by the Technical Department of the Tulsa Public Library which should be of interest to you.

State Laws Governing Application of Vacuum to Gas and Oil Sands

Can you advise me what laws have been enacted by the various gas- and oil-producing states governing the application of vacuum to gas and oil sands?—R. E. S.

Answering your letter asking about laws regulating the application of vacuum to oil sands we quote the following from Rules, Regulations and Requirements Governing the Conservation of Natural Gas and Crude Oil or Petroleum in the State of Oklahoma, issued by the Corporation Commission of Oklahoma:

"Rule 29.—Vacuum pumps not to be installed except upon application to this commission. The future installation of vacuum pumps or other devices for the purpose of putting a vacuum on any gas- or oil-bearing stratum is prohibited, provided that any operator desiring to install such apparatus may, upon notice to adjacent lease owners or operators, apply to the commission for permission; and in the matter of vacuum pumps heretofore installed, the use of same is authorized unless specifically discontinued by order of the commission upon notice and hearing. (Rule 22, Order No. 937.)"

Similar laws have been enacted in Arkansas, Kansas, Michigan, New Mexico and Texas.

You are also referred to paper by Ben E. Lindsly, on "Use and Limitations of Vacuum in the Recovery of Oil," published in Trans. Am. Inst. Min. and Met. Eng., Pet. Dev. and Tech. 1926, pp. 157-176, and Bulletin 322, Bureau of Mines, 1930, "Effect of Vacuum on Oil Wells" by Ben E. Lindsly and W. B. Barwald.

Soil Analysis Used to Locate Gas and Oil Fields

I noticed a newspaper report in which it was stated an instrument had been devised with which it could be determined whether oil existed in a locality by drilling or digging about 20 feet and testing samples of gas secured. Can you tell me something of this method?—O. L. E.

It is a well known fact that hydrocarbons exist underground in gaseous and fluid form, and in some instances as solids. The fluid hydrocarbons may be volatilized by heat so it is possible to consider either gas or oil as gas and this gas tending to escape to areas of lower pressure than at point of origin. The lowest pressure would be found at the surface of the ground so it may be assumed this hydrocarbon gas will eventually find its way to the surface.

Another well known fact is that certain materials will absorb gas when it is brought in contact with them. It is upon this principle the gas masks are designed and deadly gases extracted from the air by passing them through canisters containing a material that will absorb the gas but permit the air to pass.

Putting these two sets of facts together it has been found that hydrocarbons escaping upward through the soil will be absorbed to some extent by the soil and very minute traces of the hydrocarbons can be detected by analytical methods developed in laboratories. The results are evaluated and it is then possible to make a diagram by plotting these values upon an areal map of the region from which the soil samples were taken and then by connecting up points of equal value to develop contours or outlines which are reported to indicate areas under which gas or oil or both exist.

This method of soil analysis has been developed in Russia, Europe and in this country. It is not as yet an exact science but has proven a valuable aid to geologists and geophysicists. It is not that the laboratory analysis is not accurate but interpretation of results so obtained has not always been possible.

Russian scientists have also developed a gas surveying method of geological prospecting. It has been worked out in the Soviet Union and is based upon the determination of the traces of oil gases and vapors in mantle rocks. The apparatus designed for gas survey enables the determination separately of heavy and light fractions of hydrocarbons and other neutral gaseous organic substances contained in the subsoil air. Special gas analytic apparatus applied to gas survey permits the making of detailed analysis of fractions by consumption, distillation and chemical reactions, and these data are used for outlining contours marking the reservoir.

The basic idea is by no means new for drillers early in the life of the industry recognized the value of gas seeps in indicating favorable places to drill for gas and oil. It had been observed that these seeps formed contour lines marking the edge of the reservoir. The gas does not escape upward directly above the crest of the reservoir for much the same reason that carbonic gas escapes from a bottle through the space between the cork and inside of the bottle neck and not directly through the cork or the glass bottle.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph. D., Technical Editor

Test Methods for Distinguishing Type of Emulsions

How is it possible to determine the kind of an emulsion? That is whether a mixture of oil and water is oil in water or water in oil?—L. E.

When the instrument is available examination by means of a microscope will usually permit the observer to form a conclusion as to the nature of the droplets and the surrounding liquid. Polarized light will assist. The inspection will be facilitated by the addition of (1) water, (2) coloring matter, (3) oil.

Without the microscope some of the emulsion may be diluted with water and then another portion with oil. If the water readily blends it indicates that the emulsion is of the oil-in-water type, but if there is no mixing of the added water and there is upon the addition of oil then the emulsion is of the water-in-oil type.

There are many dyes soluble in water, but insoluble in oil, which are used for this purpose. If a particle of the dye placed on the surface of the emulsion, spreads quickly it indicates that water is in excess and therefore the type is oil-in-water.

Examinations of this character may be made on clean glass. Upon holding the glass with the test specimen to the light the divisions may be easily detected, especially in the presence of the dye.

The quantitative determination of the two liquids may be made by the convenient method of Dean and Stark, which is essentially the A.S.T.M. method of test for water in petroleum products.

References: Dean and Stark, Ind. Eng. Chem. 12, 486, 1920. A.S.T.M. Designation: D 95-30. Standards on Petroleum Products, September, 1937, page 345.

Conversion of Cracked Residuum to Asphalt by Blowing

Do you know of any method by which cracked residuum can successfully be oxidized by air blowing?—F. A. D.

It is assumed that the question has reference to the manufacture of an asphaltic material.

The condition of the residuum will of course be related to the heat the oil has been subjected to while passing through the cracking apparatus. If it has been heated to high enough temperatures there will be depolymerization evolution of gases and separation of free carbon. When heated to the extreme, the material will be unfit for asphalt manufacture.

The temperature to which an asphaltic residue is heated is of first importance because the physical and chemical properties of the product are extremely susceptible to heating for a prolonged period at a working temperature or overheating for a short time. It appears that each oil must be studied to determine its behavior under varied temperature conditions. Some asphaltic materials cannot be subjected to temperatures above 500° F., but others are treated with satisfaction at about 800° F.

The actual composition of the oil will often be reflected in the asphalt produced. The semi-asphaltic oils may produce a product having a greasy or waxy surface. Whereas a properly refined asphaltic oil will be free from oily products. There are some oils from which an asphalt cannot be made satisfactorily by steam distillation, but good results are obtained by blowing.

The cracking process may be operated to produce a good tar for conversion to asphalt by proper handling. Some refiners prefer to market the semi-liquid remaining as soft asphalt; others dilute with a suitable oil to produce the cut-back product. When good material is available, the cracked residue may be blended to give a fine commercial asphalt after steam stilling or reduction under vacuum.

The quality of the blown asphalt is excellent. They are resistant to temperature changes, of good ductility, and have excellent weather-resisting properties.

There are numerous patents covering the preparation of asphalt from residue. Among the early ones are those issued to A. G. Day and J. A. Dubbs for treating the residues with about one-fifth sulfur at a temperature approximately 825° F. until there was no evolution of gas. This was known as Pittsburgh flux, but was replaced by the blown asphalt. The basic patents for making air blown asphalts appeared between 1894 and 1900. The original Byerley process required blowing of the Lima residue for three to five days at 400° F. to 600° F. The present practice is to blow the residue for not longer than 12 hours while held at about 575° F. In some refineries heating is conducted under vacuum.

Recently chemical treatment has been introduced including the use of gases, such as carbon dioxide, oxygen, oxides of nitrogen and sulfur dioxide. Several activators have been proposed; palladium, nickel, tin, cerium, and vanadium may be mentioned. Air mixtures of chlorine, bromin, or fluorin are also used.

References: Mabery and Byerley, Am. Chem. Jour., 18, 141, 1896. A. G. Day, U. S. Pat. 58615, Oct. 9, 1866. J. A. Dubbs, U. S. Pat. 468867, Feb. 16, 1892. H. Abraham, Asphalts and Allied Substances.

CHEMICALS FOR THE PETROLEUM INDUSTRY

Oxygen

Use—Cutting and welding flame with acetylene; also hydrogen.

Form—Colorless, odorless, tasteless gas, supplied in cylinders.

Symbol—O.

Specific gravity—1.1053 (air).

Melting point— —360° F.

Boiling point— —297° F.

LIMITATIONS

Technical Grade

Specific gravity	1.105
Acid	none
Purity, per cent	99.5

Note. The usual grades are technical, pure, and U.S.P.

Sulphonic Compounds as Wetting Agents and Detergents

What are the sulphonic products, obtained from petroleum, used for cleaning and wetting wool and other materials?—G. N. P.

Sulphonic acids and their salts are derived from the acid sludges produced in the treating of lubricating oils with concentrated sulfuric acid, especially the grade known as olum.

An early process for the preparation of sulphonic acids from acid sludge was described by Petroff. He found that they could easily be extracted by treating the sour oil with small quantities of agueous alcohol. This operation yields a solution of the sulphonic acids having the consistency of syrup. These acids may also be extracted by treatment with small quantities of water, then following with alcohol or acetone to remove oil.

The oil may be extracted from the alcoholic solution by addition of petroleum ether after the sulphonic acids have been changed to the sodium salts by the addition of sodium hydroxide. The alkaline salts, and the acids, are easily soluble in water. The resulting solutions have the general property of soaps, as they form a lather and are excellent scouring agents. The sodium salts are applied to wool and other textiles as wetting agents and are valued detergents.

Reference: Gerwitsch-Moore, Petroleum Technology. Page 458.

Flushing of Hypoid Gears

According to the manufacturers of hypoid gears, steam, water, kerosene, alcohol, or gasoline should never be used to flush out hypoid gears. Would you kindly tell me what is recommended as a suitable flushing oil also what methods are used to remove residue from axle tunnels?—C. H. W.

The flushing of hypoid gears must be done with care and certain principles observed. The mediums mentioned may be employed, provided all traces of them are removed after the cleansing operation. The principle involved is that no liquid should be permitted to remain in the gear cavity which would tend to dilute the lubricant. Kerosene, alcohol and gasoline would materially reduce the viscosity of any lubricant because of the solvent action. Steam and water might be the cause of serious corrosion.

Since there are usually no cuttings from hypoid gears it is seldom necessary to actually flush out the system. The recommended practice is to drain off the lubricant as completely as possible and then add a fresh supply. When it is thought necessary to flush the gears this may be done with kerosene, or a distillate between the kerosene and gas oil fraction, obtained from the crude oil, and afterward thoroughly blow out the gears and cavity with dry air until all traces of the liquid have been removed. The same kind of flushing oil may be used to clean axle tunnels.

An additional reason for not using such volatile liquids as alcohol and gasoline is the explosion and fire hazard. Such liquids should not be used within a building and when outside only by an expert.

B&W CASING

new equipment

ecision threads

• Threaded casing is conveyed on rubber rollers—preserving the mirror like, accurate finish of the threads.

• Accurate, hard, clean, sharp threads that spin smoothly, "tong up" tight and make a safe, dependable and efficient joint—these are results of using equipment of the latest and best type obtainable for making B & W Casing.

B&W QUALITY FIRST

SEAMLESS SECURITY

I-65

The BABCOCK & WILCOX TUBE COMPANY

BEAVER FALLS · PENNSYLVANIA

FIELD OPERATIONS

Summarizing the Week's Developments

OKLAHOMA—A prospective pool opener in section 12-7-2w, near Noble in Cleveland County, was to be tested after coring richly saturated Dolomite. Work was started at a wildcat in section 5-18-6w, in Kingfisher County, the first test for that county in many months. A pool was opened in Seminole County between the Dora pool and the St. Louis field of Pottawatomie County.

KANSAS—A wildcat in section 27-21-34w, 17 miles northwest of Garden City, cored saturation and was given a good chance to open a pool in Finney County. If completed as an oil well, it will be the farthest west production in Kansas. A pool opener in section 12-11-18w, Ellis County, made a potential of 1,266 bbls. of oil daily. The Zenith pool, Stafford County, was extended one-half mile northward, and a 5,285-bbl. well was completed in the pool.

NEW MEXICO—A pool opener was completed in northeastern Eddy County in section 35-18-31. A new sand pay was uncovered in section 28-17-30 at an extension well nearly 1 mile south of the Jackson area, Eddy County. Largest completion of the week was in section 7-22-36, South Eunice pool, Lea County, with a well flowing 100 bbls. an hour. A wildcat was started in section 9-9n-35, Quay County.

TEXAS—A 4-mile extension to the Wasson field, or a new pool, was reported in Yoakum County, West Texas. The well flowed 566 bbls. in 24 hours after an acid treatment. An important southern Gaines County test was dry. Gulf Oil Corp. has purchased 100,000 acres in Culbertson, Reeves, Jeff Davis and Brewster counties thus entering the play in the southern end of the Permian Basin. In North Texas two western outposts to the K.M.A. field are showing favorably, and a deep Strawn pool appears probable in western Archer County. In Southwest Texas a test in Burleson County indicates discovery of an Edwards lime pool. In Dimmitt County a wildcat blew out with an 8,000,000-foot gas production. Good looking prospects are reported from Starr and Duval counties. The East White Point pool was extended 1,500 feet. In Harris County, in the Coastal district, two wildcats were abandoned as dry, one in the Aldine area and the other on the Ogburn prospect. The Seabreeze field was twice extended. In Coastal Louisiana deep production on the east flank of the old Jennings field was extended a half mile.

TEX-LA-ARK—The wildcat in the Village area in Columbia County, Arkansas, has failed to show production, but in the Buckner pool in the same county a new well started at 94 bbls. per hour through open choke. The Cotton Valley field in Louisiana was extended by a 612-bbl. well.

WYOMING—A new light oil field was opened in Natrona County, 14 miles northeast of Casper. It flowed 30 bbls. an hour on a drill stem test from Lakota sand topped at 7,974 feet, total depth 8,019 feet.

MICHIGAN—A pool was opened in Tuscola County, in the "Thumb" district, east of Bay City, the discovery well showing 100 bbls. initial production without artificial stimulation.

CALIFORNIA—A dry gas field in Solano County seems assured, the discovery well producing 2,500,000 feet per day through a leak below the blowout preventer.

Completions in All Fields

(Week Ending May 14, 1938)

	Oil	Gas	Dry	Total	1938 total comp. to date	1937 total comp. to date
N. Y., Pa. and W. Va.	47	10	2	59	1,601	1,413
Ohio	3	5	2	10	325	358
Indiana	2	2	7	11	37	40
Kentucky	14	10	2	26	284	100
Illinois	27	1	2	30	341	24
Michigan	8	0	4	12	283	309
Kansas	18	0	6	24	642	815
Oklahoma	37	5	11	53	646	1,028
Texas:						
North Central Texas	63	1	22	86	1,122	1,003
West Texas	40	0	9	49	864	935
Texas Panhandle	11	0	0	11	232	242
East Texas	31	0	0	31	862	782
East Central Texas	2	0	1	3	132	235
East Texas Border	5	0	0	5	65	161
Gulf Coast Texas	23	1	2	26	457	507
Southwest Texas	33	4	9	46	806	1,231
Total Texas	208	6	43	257	4,540	5,096
North Louisiana	5	0	1	6	206	232
Gulf Coast Louisiana	11	0	4	15	179	175
Total Louisiana	16	0	5	21	385	407
Arkansas	3	0	0	3	88	49
Montana	1	0	1	2	24	47
Wyoming	2	0	1	3	60	35
Colorado	0	0	0	0	3	6
New Mexico	6	1	0	7	215	278
Utah	0	0	0	0	0	0
California	23	1	7	31	502	531
Total United States	415	41	93	549	9,976	10,536
Total previous week	389	33	99	521		
Difference	26	8	6	28		

Outstanding Fields--Highlights

(Week Ending May 14, 1938)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
K.M.A.	19	193	31	22,071	395	16,850
Ector County	17	89	14	16,936	1,026	35,300
Winkler County	6	19	3	1,372	1,630	37,399
Hastings	3	10	6	2,690	529	20,430
Saxet	3	12	0	0	572	36,497
Benavides	2	13	1	80	185	10,589
East Texas	46	127	31	1,804	25,094	434,100
Talco	1	3	1	155	631	27,550
OKLAHOMA						
Dora	1	9	3	1,125	60	4,975
Oklahoma City	6	12	5	4,122	2,447	122,100
KANSAS						
Barton County	3	24	4	3,871	311	12,665
Ellis County	2	13	3	4,731	317	11,010
Rice County	3	26	1	317	1,148	34,065
Russell County	6	27	2	1,814	1,070	30,425
NEW MEXICO						
Lea County	12	94	3	816	1,717	96,140
LA-ARK-TEX						
Rodessa, Tex-La-Ark	2	23	7	1,795	972	84,735
Cotton Valley, La. (deep)	0	24	1	612	53	12,470
Lisbon, La.	1	18	3	1,965	206	11,040
Schuler, Ark.	1	18	0	0	48	9,325
MICHIGAN						
Buckeye	4	18	2	628	402	26,842
ILLINOIS						
Central Illinois	31	155	27	6,987	497	33,500
CALIFORNIA						
Wilmington	5	30	6	7,054	452	99,150

Central West

By STAFF CORRESPONDENT

Centralia Field Completes 23 New Wells; Drilling Increase

MATTOON, Ill., May 16.—Twenty-seven oil wells, one gas well, and two dry holes were completed in Illinois in the past week. The oil wells were good for an aggregate of 6,987 bbls. in initial production. Twenty-three of the new producers were completed in the Centralia district in Clinton and Marion counties.

The Central Basin fields, with more or less pipe line proration in effect, are producing about 33,500 bbls. per day, which is considerably below its potential. The whole state of Illinois is producing about 44,750 bbls. per day. The new work in the past week outnumbered the completions.

In White County, Mazda Oil Corp. No. 1 Mary Meade, NE NE NE section 26-5s-9e, was at a total depth of 3,203 feet and cores were being analyzed. Fredonia lime was topped at 3,148 feet and there was some saturation in Oolitic lime at 3,161-63½ feet and 3,199½-3,203 feet.

In Clay County, Carter Oil Co. No. 1 Cox, SE SE SW section 14-4n-5e, was drilling at 3,265 feet in lime.

In Fayette County, Carter Oil Co. No. 1 Holley, NE SE NE section 11-8n-3e, had Benoist sand at 1,518-28 feet, total depth, and was running casing. Carter No. 1 Laremmore, SE NE NE section 11-8n-3e, swabbed 76 bbls. in eight hours from Benoist sand at 1,367-84 feet. Carter No. 1 Logsdon, SW NW NE section 15-8n-3e, had Benoist sand at 1,486-88 feet, total depth, and set pipe at 1,482 feet. Carter No. 1 Main, C W half NE SE section 15-8n-3e, flowed 77 bbls. in five hours through casing from Benoist sand at 1,540-67 feet, which had been shot with 20 quarts. It is shut down because of pipe line proration. John Farrelly No. 1 Lilly, SE cor. SW SE section 16-8n-3e, an old well deepened to Benoist sand at 1,561-72 feet, pumped 33 bbls. in 11 hours and was then shut down for lack of storage room. Sam Jarvis No. 1 Sam Mize, Jr., NW cor. NE NE section 21-8n-3e, flowed 142½ bbls. through casing in 24 hours following a 25-quart shot in Weiler sand at 1,523-45 feet and was being cleaned out to the bottom. Whisenant & Henshaw No. 1 Zanders, SW SE NW section 36-9n-3e, which had salt water in Benoist sand at 1,655-72 feet, total depth, will be plugged back to 1,600 feet.

Wells Completed

Completions of the past week in the Illinois fields, with their sands records and estimated initial 24-hour production were as follows:

In Jefferson County, Carter Oil Co. No. 1 Lester Breeze, NE NE NE section 16-1s-2e, shot with 15 quarts at 1,940-50 feet, pumped 101 bbls.

In Marion County, Centralia field, Bond & Bailey No. 1 Clark, SW cor. section 7-1n-1e, sand 1,370-90 feet, shot with 10 quarts, pumped 190 bbls.; Cooper & Lacey No. 1 Pick, SE cor. SW SW SW section 1-1n-1e, sand 1,375-89 feet, shot with 15 quarts, pumped 160 bbls.; Penn Illinois Oil Co. No. 1 Deloy, S half SW NW SW section 1 Deley, sand 1,385-1,409 feet, shot with 25 quarts, pumped 130 bbls.; J. D. Reynolds No. 1 Hough, S half NW SW SW section 7-1n-1e, sand 1,367-87 feet, pumped 85 bbls., not shot; Campanella Brothers No. 1 Marshall, NE cor. SW SW section 18-1n-1e, sand 1,342-69 feet, shot with 20 quarts, pumped 200 bbls. in 14 hours; T. T. Eason & Co. No. 1 Mayer, SE cor. SW SW NW section 18-1n-1e, sand at 1,354-74 feet, shot with 10 quarts, pumped 300 bbls.; Patterson & Doran, (formerly reported B. M. Hastings), No. 1 Burgess & Gambill, NW cor. section 18-1n-1e, sand at 1,363-87 feet, shot with 15 quarts, pumped 165 bbls.

In the Centralia field in Clinton County, Adams Oil & Gas Co. No. 2 Baker, SE cor. SW SE SE section 12-1n-1w, sand at 1,363-80 feet, shot with 10 quarts, pumped 112 bbls.; A. H. Carpenter No. 1 Arman, NW NE SE section 12-1n-1w, sand at 1,360-78 feet, shot with five quarts, pumped 65 bbls. of oil and 5 bbls. of water; Louis Lilly, No. 2 Penn estate, NW cor. NE SE SE section 12-1n-1w, sand at 1,358-86 feet, shot with 10 quarts, pumped 160 bbls.; Shell Petroleum Corp. No. 3 Allison, SW SW NE section 12-1n-1w, sand at 1,372-91 feet, shot with 15 quarts, swabbed 20 bbls. of oil and 15 bbls. of water in 15 hours; Shell Petroleum Corp. No. 4 Allison, NE cor. SW NE section 12-1n-1w, sand at 1,359-90 feet, shot with four quarts, pumped 103 bbls. in 12 hours; later 98 bbls. in 12 hours; still later 57 bbls. in 10 hours; Thompson & Self No. 2 Hanseman, N half NE NW NE section 12-1n-1w, sand at 1,358-87 feet, shot with 20 quarts, pumped 250 bbls. of oil and a small showing of salt water; Huff and others No. 1 John, NE cor. SE NE SE section 13-1n-1w, sand at 1,343-84 feet, not shot, pumped 450 bbls.; Illinois Producers No. 1 Buettner, SE cor. NW NE SE section 13-1n-1w, sand at 1,353-83 feet, shot with 15 quarts, pumped 396 bbls.; E. A. Johnson No. 1 Gutzler and others, NW cor. SW NE SE section 13-1n-1w, sand at 1,344-77 feet, shot with 10 quarts, pumped 350 bbls.; E. A. Johnson No. 1 Minnie Gutzler, SE cor. NE SE section 13-1n-1w, sand at 1,337-78 feet, shot with 10 quarts, pumped 480 bbls.; Kesl & Foy No. 4 Ben Storer, NW cor. NE NE section 13-1n-1w, sand at 1,356-80 feet, not shot, pumped 150 bbls.; Lewis & Bassinger No. 1 Becker, SW cor. NE SE NE section 13-1n-1w, sand 1,354-82 feet, shot with 15 quarts, pumped 325 bbls.; Lewis & Bassinger No. 1 Hack, SE cor. NE SE NE section 13-1n-1w, sand 1,356-80 feet, shot with 15 quarts, pumped 310 bbls.; John Pugh Drilling Co. No. 1 Schnake, W half SW NE SE section 13-1n-1w, sand at 1,370-84 feet, shot with five quarts, pumped 245 bbls.; L. Johnson No. 1 Kruetemeyer, W half SE NE SE section 13-1n-1w, sand at 1,345-65 feet, shot with 15 quarts, pumped 550 bbls.; Sparta Oil Co. No. 1 Bruettner, NW NE SE section 13-1n-1w, sand at 1,361-85 feet, shot with 20 quarts, pumped 300 bbls. in 20 hours.

In Richland County, Pure Oil Co. No. 3 Staley, C E half NW section 9-2n-9e, McClosky pay at 2,987 to 3,013 feet, at intervals, flowed naturally 923 bbls. in 24 hours through tubing, 38-gravity oil; NU-Crude Oil Co. No. 1 Gill, NW SE NE section 19-3n-8e, which drilled to 3,098 feet without showings was reported temporarily abandoned. Ohio Oil Co. No. 2 Schilling C S half SW SE section 32-4n-9e, pay at 2,957-67 feet, acidized with 5,000 gallons, swabbed and flowed 137 bbls. in 24 hours and then flowed 54 bbls. in 24 hours; Pure Oil Co. No. 2 Wade, NE SE SW section 33-4n-9e, pay at 2,979-84 feet, flowed 80 bbls. through tubing.

In Bond County C. R. Rigall and others abandoned the location for No. 1 Neilson, NE NE NW section 32-5n-4w.

In Warren County, W. C. & W. abandoned No. 1 Sarenburger, NE NE SE section 35-12n-1w (fourth principal meridian) at 495 feet. Niagara lime was topped at 370 feet and water appeared at 405 feet.

In Clark County, Stipe and others No. 1 Wilhoit, SW NE NW section 30-12n-13w (Indiana principal meridian), is a 250,000-foot gasser at 290-96 feet. W. R. Miller No. 1 Wilhoit, C NW NW section 19-12n-14w, was a hole full of water at 406 feet, and was abandoned.

New Operations

In Wayne County, Texas Co. had cellar and pits dug for No. 3 Silverman, C N half NW NW section 16-3s-7e.

Jefferson County: Carter Oil Co. has rig up for No. 1 R. Dobbs, SW SW NW section 10-1s-2e.

Marion County, Centralia field: Capital City Development Co. No. 1 Donahue, NE cor. NW SW SW section 7-1n-e, was running 8¼-inch casing to 575 feet; J. D. Reynolds No. 1 Heeds, NW cor. SW SW SW section 7-1n-1e, rigging up machine; Somers & Egan No. 1 Lancaster, 990 feet from west and 1,330 feet from south lines of NW quarter section 16-1n-1e, a wildcat, drilling at 630 feet; Ross A. Coleman No. 1 Schroeder, near NE cor. SW NE NW section 18-1n-1e, drilling at 120 feet; T. T. Eason & Co. No. 1 Mierman, CWL SW section 18-1n-1e, rigging up rotary; Hawley and others No. 1 Thompson, C NW SW NW section 8-1n-1e, location; N. C. Moore No. 1 Slone, E half NW SE SW section 18-1n-1e, location; Sparta Oil Co. No. 1 Raines, near C SW SE SW section 18-1n-1e, drilling at 450 feet; Fairhope Oil Co. No. 1 Menther, near SE cor. NW NW NW section 19-1n-1e, spudded and shut down; F. C. Parish No. 1 Johnson, S half SW SW NW section 19-1n-1e, drilling at 200 feet; Joe Potter No. 1 Rixman, SE cor. NW NW NW section 19-1n-1e, rig up; William P. Young, No. 1 Centralia Coal Co., NW cor. SE NW NW section 19-1n-1e, location.

Clinton County, Centralia field: Adams Oil & Gas Co. No. 2 Felton, SW NW NW section 1-1n-1w, drilling at 370 feet; Carpenter & Goldberg No. 1 C.B.&Q. Railroad, S half SE SE SE section 1-1n-1w, rigging up rotary; Shell Petroleum Corp. No. 1 Hauseman, SW SW SE section 1-1n-1w, cellar and pits; Adams Oil & Gas Co. No. 1 Keister, C NW SE SE section 2-1n-1w (corrected), location; O. L. Ray and others No. 1 Schnitzmeyer, NE NE SE section 6-1n-1w, drilling at 535 feet; Adams Oil & Gas Co. No. 1 Kaelem A, 660 feet from north and 1,155 feet from west lines SW section 12-1n-1w, set 10-inch at 57 feet; J. Alford No. 1 Rittinghouse, NW cor. SE NE SE section 12-1n-1w, rigging up rotary; Jack Greer and others No. 1 Abernathy, NW cor. SE NE SE section 12-1n-1w, shut down at 550 feet; E. E. Lehman, No. 1 Legried, N half SW NE SE section 12-1n-1w, shut down at 60 feet; A. B. Ryan No. 2 Torbney, E half SE SE SE section 12-1n-1w, rigging up rotary; Linier No. 1 Panzan, S half SW SE NE section 13-1n-1w, rig up; Dan McQueen No. 1 Holtenber, SW cor. NE SE section 13-1n-1w, rig up; Self, Deaton & Morgan No. 1 Dodillet, NW cor. SE SW SW section 24-1n-1w, spudded; O. L. Ray and others No. 1 Fisher, E half NW NE NE section 24-1n-1w, rig up.

Lawrence County: Warren Hastings and others No. 2 Victor Christman, Christensen, SW cor. NE SW SW section 11-3n-12w, drilling at 1,150 feet.

Bond County: John Farrelly No. 1 Kyle, C SW NW NW section 28-4n-4w, location; J. E. Huppard and others No. 1 Dresser, NW cor. SW NE NW section 21-6n-4w, drilling at 200 feet.

Clark County: Stipes and others No. 2 Wilhoit, near C SE NE NW section 30-12n-13w, spudded.

In Clay County: Pure Oil Co. No. 3 McKinney, C W half NE SW section 9-2n-8e, cellar and pits; Pure Oil Co. No. 4 Scrugham, C E half SW NW section 9-2n-8e, cellar and pits; Kingwood Oil Co. No. 1 Graham, C S half SW NE section 13-3n-6e, moving in rotary.

In Richland County, Pure Oil Co. No. 16 J. O. Coen, C N half NW NE section 4-3n-9e, rig; Pyramid Oil Corp. No. 2-C University of Chicago, 330 feet from south and 1,000 feet from W lines of SW quarter section 23-4n-10e, location; A. Muhlbach No. 1 O'Donnell, NW cor. section 26-4n-10e, rig up.

In Fayette County, Carter Oil Co. No. 1 Alsop, NW SW NW section 12-8-3e, rig; Carter Oil Co. No. 2 Logsdon, SE NE NW section 15-8n-3e, rig; Sam Jarvis No. 1 Sinclair, 1,020 feet from west and 370 feet from north Sinclair, a wildcat 1,020 feet from west and 370 feet from north lines of NE quarter section 29-8n-3e, saturated sand at 1,376-86 feet reaming down to core ahead.

CENTRAL OHIO

LIMA, Ohio, May 16.—A small gas well and a dry hole in the Lima field, and 2 oil wells, 4 gas wells and 1 dry hole in the Central Ohio fields summed up the past week's results.

In Ashland County, Lake Township, Harmon & George No. 1 Noah Emerick, section 3, is a gas well, gauging 1,800,000 feet from Clinton sand at 3,015-25 feet.

In Guernsey County, Monroe Township, Jewell No.

(Continued on Page 140)

Oklahoma Operations

By
DAL DALRYMPLE

Showing of Oil in Cleveland County Wildcat to Be Tested

The prospective Cleveland County pool opener, W. A. Delaney and associates No. 1 Bugher, SE SE SW section 12-7-2w, currently one of the more interesting Oklahoma wildcats, was due for a test this week. Plug was to be drilled early in the week, with testing to follow.

Saturated cores were taken from Simpson Dolomite at 7,445 feet, where 7-inch casing was cemented, to 7,682 feet, total depth. Rich saturation was found in the last core at 7,674-82 feet, with sand predominating in the sandy dolomite. The showing of oil was verified by a Schlumberger survey. Outcome of the test this week may determine if operators will drill into Wilcox sand or complete at present depth.

Location of the wildcat is southeast of Noble, and about 3 miles east of the McClain County line. It is on a structure geologized by Hubert Bale of Oklahoma City, with the assistance of Noel Evans, his former partner and now with Tide Water Associated Oil Co. at Houston. Several seismograph crews were shooting in townships around the location at the week-end.

Work was started at a wildcat in Kingfisher County the past week, the first test for that county in many months. It is the H. R. Hollenbach and others No. 1 Zerger, section 5-18-6w, southeast of Hennessey, on a 7,000-acre block. It is to be an 8,000-foot or Wilcox sand test. Companies with protection in the area include Sinclair Prairie Oil Co., Wilcox Oil & Gas Co., Magnolia Petroleum Co. and Ohio Oil Co.

Wildcat Operations

W. A. Villines and associates No. 1 Swan, NW NE NW section 26-7-5, new pool opener in Seminole County, was completed at 3,001 feet in shale, swabbing 135 bbls. of 40-gravity oil in the first 24 hours. Gas gauged 500,000 feet. It later pumped 75 bbls. of oil in 24 hours and was pumping 60 bbls. daily when completed. It had Thurman sand at 2,985 feet and set 7-inch casing at 2,987 feet. It is between the Dora pool of Seminole County and the St. Louis field of Pottawatomie County.

Alma Oil Co. No. 1 Martin, SW cor. section 4-12-7, wildcat in western Okfuskee County, was dry and abandoned at 4,513 feet, total depth.

Magnolia Petroleum Co. No. 1 Merrell, SW SE NE section 34-6-5, wildcat south of Konawa in Seminole County, found salt water in Wilcox sand and was abandoned at 3,241 feet, total depth.

Wilcox Oil & Gas Co. No. 1 Evans, SW SW NW section 21-14-6, outpost southwest of the Sac and Fox pool, Lincoln County, was dry and abandoned at 3,170 feet, total depth.

Other recent wildcat completions: Mid-Continent Petroleum Corp. and others No. 1 Smith, NE SE SW section 31-7-4, Pottawatomie County, dry and abandoned at 4,505 feet. Summitt Drilling Co. No. 1 Wass, SE NE NE section 30-8-7, Seminole County, dry and abandoned at 4,257 feet. Carter Oil Co. No. 1 Wood, SE SE section 13-2n-8, Coal County, abandoned location; L. P. Sandback and others No. 1 Porter, NE SE NW section 28-4-7, Pontotoc County, abandoned at 1,205 feet.

New wildcats: Helmerich & Payne No. 1 School Land, SW SE SW section 16-28-1w, Kay County, rig; Hollenbach & Haley No. 1 Zerger, C SE SW section 5-18-6w, southeast of Hennessey in Kingfisher County, digging pits; Louis Stekoll No. 1 Mayer, SE SE SW section 19-3n-8, Pontotoc County, location; Supreme Oil Co. No. 1 Stevenson, SW SW SE section 27-3n-14, Pittsburgh County, drilling below 50 feet; L. B. Jackson No. 1 Berryhill, NW cor. section 1-18-10, Creek County, drilling below 250 feet; Anderson-Prichard Oil Corp. No. 1 School Land, SE cor. section 14-6-17w, Kiowa County, location; Leroy, Estes and others No. 1 Drevs, NW cor. section 23-7-20w, machine.

Lincoln County

Wilcox Oil & Gas Co. No. 11 Sac and Fox, SW SE NW section 15-14-6, Sac and Fox pool, Lincoln County, had Prue sand at 2,914-3,005 feet, was bottomed at 3,007 feet, and flowed 250 bbls. of oil daily.

Same company's No. 1 DeLozier, SE SE SW section 10-14-6, flowed 130 bbls. of oil daily from Prue sand found at 2,943 feet, total depth 3,018.

Wilcox Oil & Gas Co. No. 1 Fitch, SW NW NE section 15-14-6, found Prue sand at 2,931 feet, total depth 3,020 feet, and flowed 65 bbls. of oil daily.

The Wilcox company's No. 10 Sac and Fox, NW SW SW section 15-14-6, flowed 60 bbls. of oil daily from Prue sand topped at 2,947 feet, total depth 3,067 feet.

Helmerich & Payne No. 5 Fitch, NW SW NE section 15-14-6, had Prue sand at 2,948 feet, total depth 3,005 feet, and flowed 55 bbls. of oil daily.

Sinclair Prairie Oil Co. No. 3 Buckles, NW NE SE section 15-14-6, found Prue sand at 2,908 feet, was bottomed at 3,001 feet, and swabbed 25 bbls. of oil daily, with gas estimated at 2,000,000 feet.

Same company's No. 4 Hoyt, SE NW NE section 5-14-3e, Hoyt pool, was dry and abandoned at 5,143 feet.

The following Lincoln County operations were reported for the first time: Wilcox Oil & Gas Co. No. 4 DeLozier, NW SE SW section 10-14-6, drilling below 1,900 feet; Mudge Oil Co. No. 3 Robertson, NE NE SW section 10-14-6, topped Prue sand at 2,974 feet, total depth 2,981 feet, bailing; same operator's No. 4 Robertson, NW NE SW section 10-14-6, rig; Wilcox Oil & Gas Co. No. 12 Sac and Fox, SE SW NW section 15-14-6, drilling below 2,360 feet; same company's No. 13 Sac and Fox, NW SE NW section 15-14-6, and No. 14 Sac and Fox, NE SW NW section 15-14-6, cellar and pits; Sinclair Prairie Oil Co. No. 4 Buckles, SW NW SE section 15-14-6, topped Prue sand 2,911 feet, total depth 2,917 feet, running 7-inch casing.

Seminole County

Winkler & McQueen No. 4 Bruner, SE NW NE section 4-6-6, southeast end of the Dora pool, Seminole County, flowed 600 bbls. of oil through casing in eight hours after a shot with 100 quarts. It had sand at 2,794 feet and was bottomed at 2,843 feet.

D. B. Malarnee No. 3 Shelton, NW NW SW section 33-7-6, near the center of the Dora pool, flowed 400 bbls. of oil in 24 hours after shooting with 90 quarts at 2,887-2,950 feet, total depth, in Boggy sand.

The third Dora completion of the week was J. F. Smith No. 1 Harryman C, NW SW SE section 33-7-6, had sand at 2,838 feet, total depth 2,928 feet, plugged back to 2,890 feet, was shot with 200 quarts and pumped 125 bbls. of oil in 24 hours.

W. B. Pine No. 12 Cheparney, SW NE SW section 12-5-7, Allen area, had a junked hole and was abandoned at 4,303 feet, total depth.

New operations in Seminole County: Minnehoma Oil & Gas Co. No. 1 Alexander, NE NW NW section 19-6-6, location; Simpson-Roodhouse and others No. 1 Salt Creek Baptist Church, SW SE SE section 13-6-5, spudded; W. B. Pine No. 12-A Cheparney, SW NE SW section 12-5-7, set surface casing.

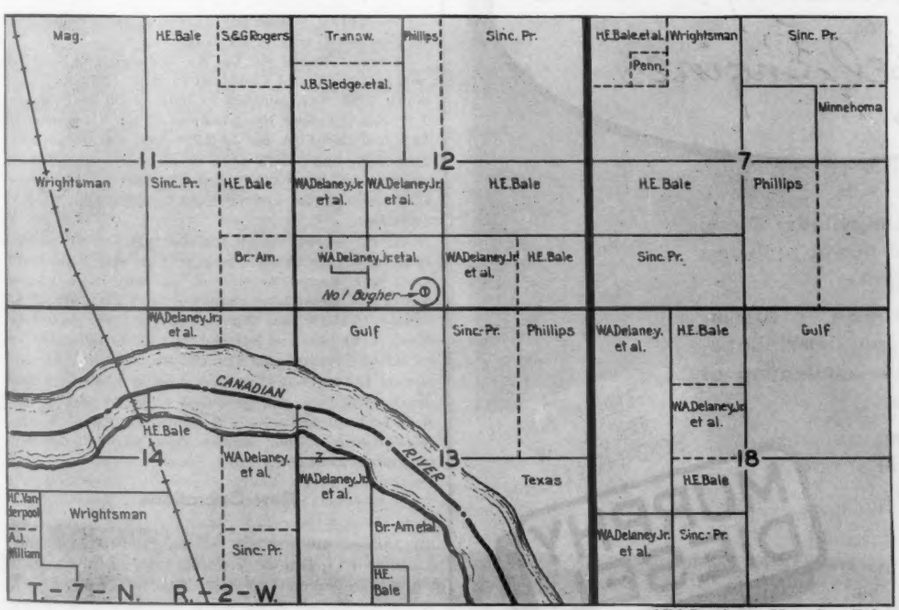
Pontotoc County

M. C. Mitchell No. 1 Brown, NE SE SE section 33-2n-7, Fitts district, Pontotoc County, had Gilcrease sand at 1,843-78 feet, total depth, and pumped 75 bbls. of 33-gravity oil in 24 hours.

United Corp. of Massachusetts No. 2 Burke B, NW SW SE section 25-5-4, Beebe pool, topped Viola lime at 2,498 feet, had first oil at 2,531 feet and was bottomed at 2,622 feet. It was shot and pumped 150 bbls. of oil in 24 hours; acidized with 1,000 gallons, pumped 200 bbls. in 24 hours and 120 bbls. daily when completed.

Factor Oil Co. No. 1 Kroeger, SE cor. section 25-5-6, West Francis area, had Gilcrease sand at 2,010-2,146 feet, total depth, and produced 15,000,000 feet of gas.

First reports of new Pontotoc County tests: Patsy Oil Co. No. 3 Meharg & West, SE SE SW section 21-2n-6, moving in rig; Superior Oil Co. No. 1 Indian Royalty,



Mid-Continent Map Co., Tulsa

W. A. Delaney, Jr., and others wildcat in SE SE SW section 12-7-2w, Cleveland County, Oklahoma, cored rich saturation in Simpson Dolomite

NE NE NW section 36-5-4, cellar and pits; Lake Oil Co. No. 2 Neal, NE NW SW section 25-5-4, rigging up rotary.

Payne County

Sun Oil Co. No. 2 Sherman, NE NW SW section 14-19-5, Yale-Quay area, Payne County, topped Wheeler sand at 2,728 feet, total depth 2,750 feet, and swabbed 25 bbls. of oil in 24 hours.

Oklahoma County

Five wells were completed in the Oklahoma City field, Oklahoma County. Olson Oil Co. and others No. 2 Slaughter, NW NW SW section 15-12-3w, had Dolomite at 6,396 feet, total depth 6,510 feet, and had initial yield of 1,440 bbls. of oil in 24 hours.

Same operators' No. 1 Johnson, NE SW SW section 15-12-3w, flowed 1,004 bbls. of oil daily from Dolomite at 6,403 feet, total depth 6,505 feet.

Clark & Co. No. 1 State, section 16-12-3w, topped pay at 6,535 feet, total depth 6,549 feet, and flowed 852 bbls. of oil in 24 hours.

Same company's No. 1 Cobb, NW SE SW section 15-12-3w, had Dolomite at 6,400 feet, total depth 6,510 feet, and made potential of 680 bbls. of oil, with 3,000,000 feet of gas.

Southwest Petroleum Co. No. 1-A Sinopoula, SW NE SE section 34-12-3w, had Wilcox sand at 6,276 feet, was bottomed at 6,458 feet, and pumped 146 bbls. of oil in eight hours.

Garfield County

Big Chief Drilling Co. and Lease Investment Co. No. 1 Zollars, SW SW SE section 34-24-3w, Barnes district, Garfield County, had Wilcox sand at 4,925 feet, total depth 4,943 feet, and was dry and abandoned.

Hughes County

H. Wasson and others No. 1-A Sipes, NE NW SE section 35-8-8, Jefferson pool, Hughes County, had a fishing job at 1,875 feet, and was abandoned.

Caddo County

Phillips Petroleum Co. No. 1-B Yule, SE NW SW section 1-5-9w, Cement field, Caddo County, had Deese pay at 5,010-69 feet, total depth, and produced 33,000,000 feet of gas, with 1,400 pounds rock pressure.

English Drilling Co. and others No. 1-A McKenna, SE NW SE section 11-5-9w, had dug cellar and pits.

Estimated Daily Production

Estimated daily production for Oklahoma for the week ending May 14 and for the preceding week was as follows:

	Barrels	
	May 14	May 7
Allen	5,275	5,450
Billings	6,250	6,500
Burbank	7,400	7,425
South Burbank	10,750	10,975
Balance Osage	18,000	19,200
Blackwell district	4,675	4,700
Bristow-Slick	6,975	7,000
Chandler	2,175	2,225
Crescent	5,200	5,250
Cromwell	3,075	3,050
Cushing-Shamrock	10,650	10,825
Duncan district	3,950	3,975
Edmond	7,475	7,750
Fish	3,425	3,550
Fitts	52,875	53,375
Jesse	3,525	3,850
Graham	4,225	4,200
Gray	850	875
Healdton	8,625	8,675
Hewitt	3,625	3,600
Keokuk	4,025	3,875
Konawa	1,250	1,375
Lucien	10,500	10,750
Moore	4,875	4,650
Oklahoma City	122,100	119,975
Olympic	5,850	5,975
Ramsey	950	1,200
Sasakwa	1,675	1,700
Sholem-Alechem	2,900	2,925
Seminole district:		
Bowlegs	8,375	8,325
Carr City	3,425	3,450
Dora	4,975	5,025
Earlsboro	4,550	4,525
South Earlsboro	500	525
East Earlsboro	5,350	5,275
Little River	7,750	7,600
East Little River	825	850
Maud	700	725
Mission	1,475	1,500
Seminole	6,525	6,475
East Seminole	1,750	1,775
Searight	2,500	2,450
Total Seminole	48,700	48,500
St. Louis-Pearson	20,750	21,700
Tatums	3,650	3,725
Tonkawa-Garber-Thomas	4,200	4,225
Wewoka	2,425	2,425
Yale-Jennings	3,800	3,825
Other pools	78,000	77,500
Total Oklahoma	484,650	486,775

Creek County

Recent Creek County completions include the following:

L. B. Jackson No. 4 Alberta, SW NE NW section 25-18-9, topped Wilcox sand at 2,990 feet, total depth 3,037 feet, flowed 680 bbls. of oil daily.

Klingensmith Oil Co. No. 2 Veasley, NE NE NW section 36-18-10, Kellyville district, produced 1,500,000 feet of gas at 1,812 feet, total depth.

Sinclair Prairie Oil Co. No. 3 Wallace, SE SW SW section 24-18-9, Wilcox sand 3,082 feet, total depth 3,096 feet, pumped 10 bbls. of oil daily.

Big Four Petroleum Co. No. 1 Vance, NW SW NE section 24-19-7, topped pay 2,630 feet, total depth 2,669 feet, flowed 75 bbls. of oil daily.

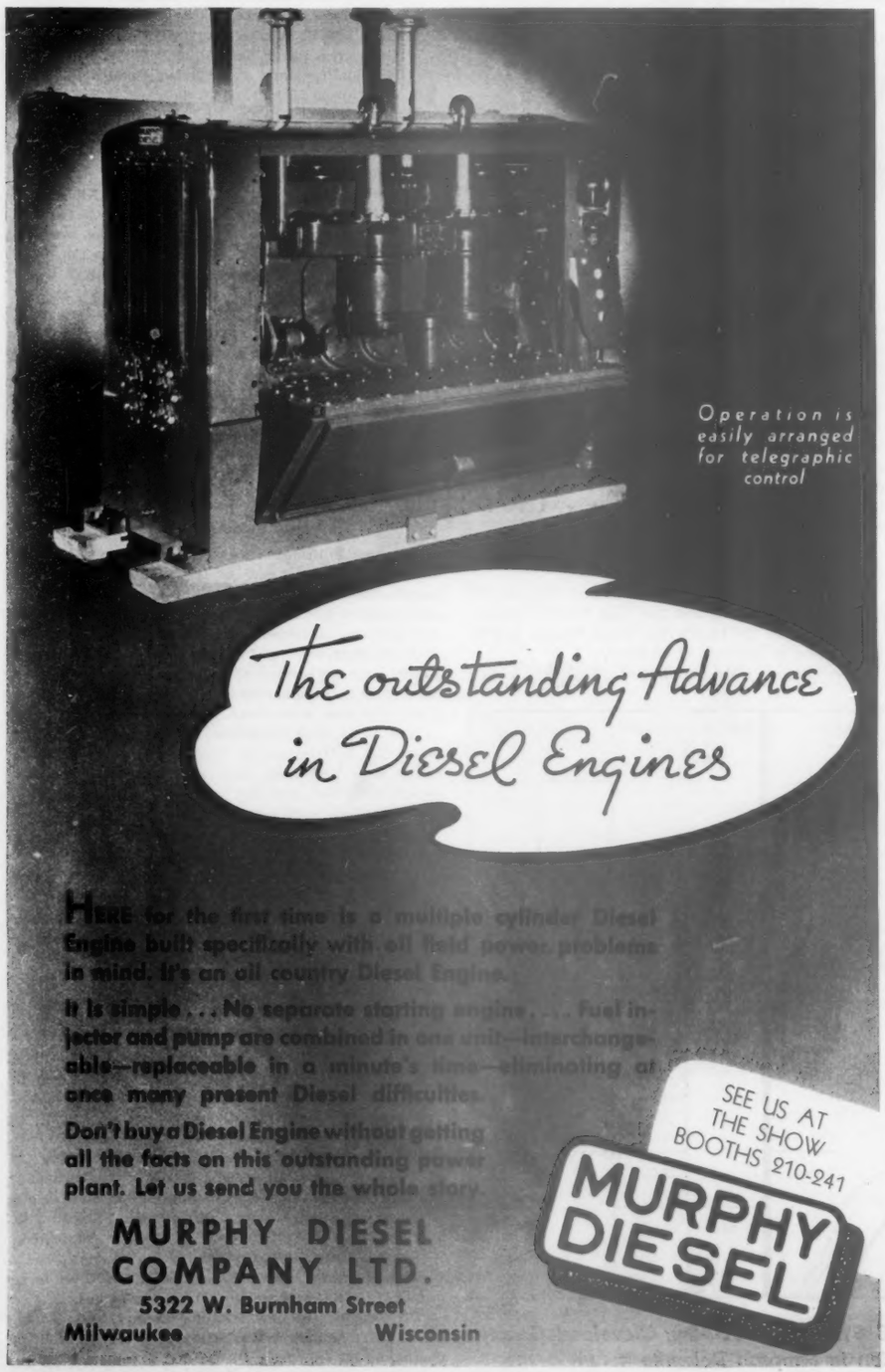
Sinclair Prairie Oil Co. No. 5 Oates, C S half NE section 14-19-9, had Cleveland sand at 1,257 feet, total depth 1,289 feet, pumped 33 bbls. of oil in 24 hours. J. P. Brady & Sons No. 2 Duncan, C NE NE section 19-19-9, had Red Fork pay at 2,378 feet, was bottomed at 2,404 feet, pumped 20 bbls. of oil daily. Gled Oil Co. No. 12 Koch, NE SW NE section 20-19-9, was completed as a water input well at 2,440 feet, plugged back to 2,302 feet.

H. C. Detrick No. 1 Kimble, NE SE NE section 10-14-10, topped Dutcher sand at 2,624 feet, total depth 2,643 feet, flowed 35 bbls. of oil daily, with 250,000 feet of gas. Lease Investment Co. No. 1 Tate, SE NE SE section 35-15-10, had Wilcox sand at 3,117 feet, total depth 3,138 feet, and pumped 28 bbls. of oil daily.

Central Commercial Oil Co. No. 1 Ricks, SE cor. section 16-17-9, had Cleveland sand at 1,360 feet, total depth 1,370 feet, and produced 1,750,000 feet of gas. A. B. Ice Drilling Co. No. 2-A Adams, SW SW SE section 18-17-10, was a 7-bbl. pumper from pay at 2,330 feet, total depth 2,347 feet.

New Operations

New work in Creek County: Oklahoma Oil Corp. No. 1 Koch, SW NW NW section 11-14-10, rigging up machine; Chapman & McFarland No. 2 Brooks, SW NW SW section 36-15-10, drilling below 3,088 feet; Tide Water Associated Oil Co. No. 21 Richards, NW NE SW section 4-17-7, set 5-inch casing at 2,606 feet; Walter Shaffer and others No. 1-A Wiley, NE NE SE section 9-17-7, rigging up machine; Shibley Oil & Gas Co. No. 5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Campbell, SW NW NW section 13-17-7, location; Shaw, Doak & Hughes No. 2-A Ingalls, NE SW SE section 24-17-7, total depth 2,827 feet, estimated 5 bbls. of oil and 500,000 feet of gas daily; Oklahoma Gasoline Plants, Inc., No. 1 McIntosh, NW NW NE section 26-17-7, drilling at 1,655 feet; Central Commercial Oil Co. No. 1-A Bruce, SW cor. section 15-17-9, running 8-inch casing at 800 feet; Beal & Berryhill No. 1 McCauley, SW SE SE section 9-17-10, spudded; McAdams & Thornton No. 1 McKellops, SW NW NE section 30-17-10, drilling at 1,827 feet; Sand Springs Home No. 31 Atkins, C W half NW NE section 5-18-7, drilling at 1,140 feet; J. E. Crosbie, Inc., No. 9 Escoe, SE NW SW section 26-18-8, total depth 2,598 feet, cleaning out; L. B. Jackson No. 10 Wills, C N half SW NW section 26-18-8, drilling 2,305 feet; Pepis & Alexander No. 1 Hughes, SE SW SW section 15-18-10, location; Klingensmith No. 1 Kiefer, C SW NE section 36-18-10, drilling at 905 feet; Big Four Petroleu mCo. No. 1 Copeland, NE SE NW section 24-19-7, drilling at 940 feet; George Marble No. 1 Emmans, NW SW NW section 18-19-8, drilling at 455 feet; A. W. Swift No. 1 Hayden & Hutton, SW SW NE section 12-19-9, drilling at 935 feet; Sinclair Prairie Oil Co. No. 6 Oates, SE NW SE NE section 14-19-9, spudded; J. P. Brady and others No. 7 Duncan, SW SE NE section 19-19-9, drilling below 1,305 feet.

Osage County

Tide Water Associated Oil Co. No. 8 Osage, SE NE SE section 20-24-9, Osage County, was bottomed at 2,251 feet, plugged back to 2,240 feet and flowed 140 bbls. of oil in 24 hours.

Lewis Production Co. and Texas Co. No. 1 Osage, NW NW SE section 33-24-7, Naval Reserve area, swabbed 8 bbls. of oil daily from pay topped at 2,615 feet, total depth 2,640 feet.

Ida Rabinowitz No. 4 Osage, SE SW NW section 22-22-9, topped pay at 2,100 feet, total depth 2,114 feet, and pumped 35 bbls. of oil and 15 bbls. of water daily.

Pawnee County

Johnson Oil Refining Co. No. 12 Mann, NW SW SW section 23-20-7, Teriton district, Pawnee County, had Bartlesville sand at 2,539-80 feet, total depth, and flowed 80 bbls. of oil daily, with 681,000 feet of gas.

J. B. Grieves No. 2 Smith, SW NW NW section 34-20-7, topped pay at 2,742 feet, total depth 2,783 feet, and swabbed 55 bbls. of oil daily.

M. P. Thomas No. 1 Zackofoose, SE NE NE section 23-20-9, Keystone area, swabbed 50 bbls. of oil and 1 bbl. of water daily from Layton sand topped at 1,204 feet, total depth 1,244 feet.

P. Adamson, Jr., No. 10 Thomas, NW SE NW section 25-21-8, was dry and abandoned at 2,265 feet, total depth.

New activity in Pawnee County: J. B. Grieves No. 1-A Armstrong, NE SW NE SW section 34-20-7, drilling below 867 feet; J. V. Dunbar No. 2 Taylor, SW NE NE section 20-20-9, set 6-inch casing at 2,600 feet, total depth; Selby Oil & Gas Co. No. 1-A Peterman, SW NW NW section 24-20-9, machine; Johnson Oil Refining Co. No. 6 Beyl, NE SW NE section 27-20-9, had Red Fork sand 2,108-48 feet, total depth 2,149 feet, swabbed and flowed 108 bbls. of oil in the first 24 hours and was preparing to put on pump.

Pottawatomie County

Denver Producing & Refining Co. No. 1-A Zoeller, C E half NW SE section 5-6-5, St. Louis district, Pottawatomie County, was bottomed at 4,178½ feet, water intruded and it was plugged back to 4,149 feet. After treating with 5,000 gallons of acid, it pumped 75 bbls. of oil and 1,090 bbls. of water daily.

Magnolia Petroleum Corp. No. 2 Jordan, SW SW SE section 12-7-4, had a hole full of water and was abandoned at 4,295 feet.

J. F. Smith and others No. 1-A Brown, NE NE SE section 21-7-4, was building rig.

Okmulgee County

Louis Stekoll No. 1 Walker, NE NE SW section 29-14-10, Okmulgee County, had Dutcher sand at 2,685 feet, total depth 2,981 feet, and was dry and abandoned.

New work in Okmulgee County: J. Garfield Buell, Inc., No. 2 Smith, C NW SE section 17-13-11, rig; J. L. Selby No. 8-A Doneghy, SE NW NE section 3-14-14, rig; W. W. Wilson No. 1-A Mayfield, NW NE NE section 27-14-14, drilling at 220 feet; Texas Co. No. 8 Bruner, SW SE SE section 16-15-14, an old well, preparing to deepen.

Muskogee County

J. R. Parks No. 1 McDaniel, NE SW SE section 17-14-19, Jolly-Patton pool, Muskogee County, was completed in sand at 570-575 feet, total depth, producing 2,000,000 feet of gas daily.

Beard No. 1-A Lewis, C E half SW SW section 32-14-16, was drilling at 155 feet.

Garvin County

Skelly Oil Co. No. 1 Patton, SE cor. section 29-1n-3w, Tussy pool, Garvin County, had Tussy sand at 2,048-2,265 feet, total depth 2,640 feet, plugged back to 2,330 feet, and pumped 259 bbls. of oil in 24 hours.

Samedan Oil Co. No. 1 Murray, NE NW NW section 32-1n-3w, had sand series at 2,080-2,210 feet, total depth 2,340 feet, and pumped 95 bbls. of oil daily.

Carter County

Sinclair Prairie Oil Co. No. 20 Mullin, NW NE SE section 4-4s-3w, Carter County, pumped 14 bbls. of oil daily from Healdton sand after a shot at 1,000-1,070 feet, total depth.

R. E. Owens No. 3 McClish, NE NE NW section 30-2s-3w, was a location.

Carl Carter No. 2 McClish, NE NE NW section 30-2s-3w, had sand at 345-360 feet, total depth, and pumped 2 bbls. oil daily.

Additional New Work

Clark & Co. No. 4 State, SE NE SE section 16-12-3w, Oklahoma City field, Oklahoma County, was rigging up rotary.

W. E. Hardesty No. 1-A Davis, SE NE NW section 26-19-12, had sand at 1,172-1,202 feet, total depth 1,208 feet, and was cleaning out after a shot. It is in Tulsa County.

Harry Abels No. 8 Talley, SW NE NW section 11-1n-5w, Stephens County, was rigging up machine.

Magnetic Storm

TUCSON, Ariz.—The U. S. Coast and Geodetic station reports a severe magnetic storm began at 10 a.m. May 11, and ended at 7 p.m. May 12, central standard time.

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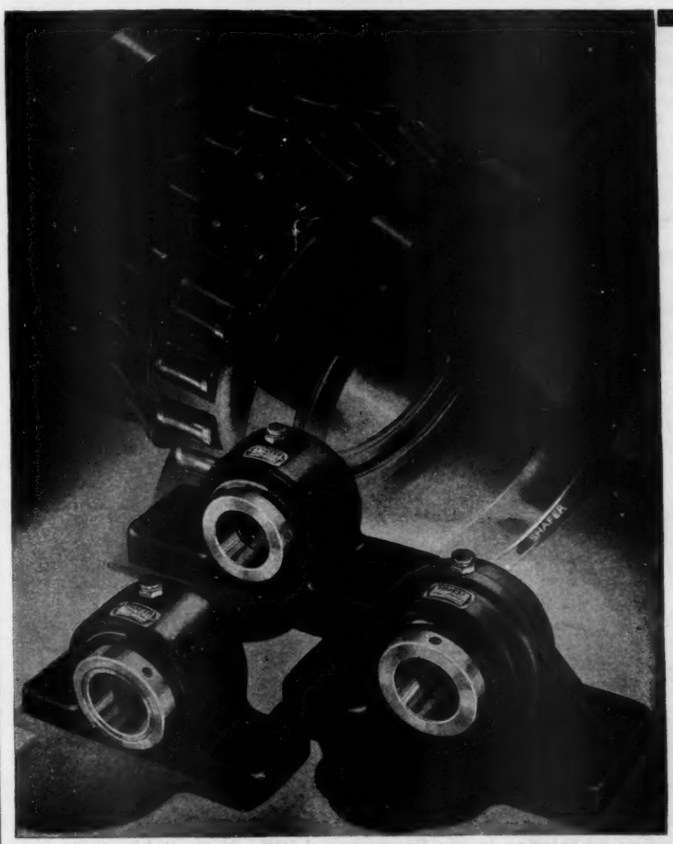

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Texas and Louisiana Gulf

By
NEIL WILLIAMS

Louisiana Coast Continues to Lead in Good Prospects

HOUSTON, Tex., May 16.—The showing of a wildcat northwest of the Gueydan field, Vermilion Parish, Coastal Louisiana, continued to keep that sector of the Gulf Coast district in the limelight. Magnolia Petroleum Co. No. 1 J. B. Ferguson, section 5-12s-2w, about 5 miles northwest of the Gueydan field, is coring ahead in shale at 7,255 feet after logging favorable showings from 7,061 to 7,173 feet. A core record showed the following results: Broken sand and shale with oil and salty taste at 7,061-70 feet; 7,145-50 feet. sand, odor of oil, no salty taste; 7,157-59 feet, broken shale with an odor of oil; 7,167-69 feet, oil sand; 7,169-71 feet, core missed, and from 7,171-73 feet, sand showing oil. No drill stem test was attempted and it is possible the hole will be carried considerably deeper before a test is made of the above section.

The Horseshoe Bayou field, St. Mary Parish, gained its second 10,000-foot producer with the completion of Texas Co. No. 1 St. Mary Parish Land Co. Perforations were made in the casing at 10,891-95 feet and the well flowed 350 bbls. of pipe line oil per day through a 10/64-inch choke, with tubing pressure 1,625 pounds. The well is in section 37-17s-9e, and is producing from the same sand as the discovery well completed in August, last year.

Deep production on the east flank of the old Jennings field, was extended about a half mile east with the completion of the Gulf Oil Corp. No. 39 Arnaudet, section 47-9s-2w. The completion was made from a screen setting at 7,076-7,112 feet, the total depth, and the well flowed 450 bbls. per day through a three-sixteenths inch choke. It is east of Stanolind Oil & Gas Co. Housiere-Latriele lease, the most southeasterly production on the dome.

In the Lirette field, Terrebonne Parish, Humble Oil & Refining Co. No. 1 Wurzlow, was reaming hole to bottom at 8,566 feet, preparatory to making a drill stem test. A nine-minute drill stem test at 8,400-58 feet, tested 675 pounds of pressure and 600 feet of drilling mud, cut with distillate. A Schlumberger survey from 8,458 feet showed 30 ohms resistivity and 85 millivolts porosity at 8,421-58 feet. Union Producing Co. No. 1 Fundenburk, section 50, is drilling in shale below 9,558 feet.

Gulf Oil Corp. has staked location for two new wells in the Quarantine field, Plaquemines Parish, and canals are being dredged to the locations. No. 4 State, the second well drilled on the structure, is below 8,963 feet, several hundred feet below the regular pay. Drill stem tests in the discovery horizon from 8,100-8,300 feet, showed salt water.

Discovery Well Plugged Back

Union Sulphur Co. has plugged back the hole in No. 2-B Calcasieu National Bank, completed two weeks ago as the first oil well for the Woodlawn field, Jefferson Davis Parish. The well was originally completed at 8,893-84 feet, but salt water broke in and a test will be made in the 8,100-foot zone which is said to have shown good indications.

The Villa Platte field, Evangeline Parish, was extended a half mile to the northeast by Continental Oil Co. No. 1 Opelousas. Oil sand was logged at 9,060-9,100 feet and the well was completed for an initial production of 394 bbls. in 16 hours through a 5/32-inch choke. On the southwest side, Continental Oil Co. No. 1 T. E. Vidrine is drilling in shale below 9,822 feet, and has failed to log any showing in the discovery horizon.

On the South Crowley Prospect, Acadia Parish, Humble Oil & Refining Co. has apparently been successful in shutting off the salt water in No. 1 Boyd Finch, which is expected to prove to be a discovery well of this structure. After making a cement squeeze job through perforations at 7,308-15 feet, the casing was reperforated and on a 16-minute drill stem test, 21 thribbles of fluid of which 200 feet was pipe line oil was recovered. Screen and liner is being set for a final completion test.

Fohs Oil Co. continues drilling its two deep wildcats in Terrebonne Parish and no additional showings have been reported. No. 1 Buckley & Bourg, section 77-19s-17e, is drilling shale below 12,555 feet, while No. 1 State, section 41-19s-19e, is coring in shale below 11,020 feet. This parish gained a new wildcat location in the staking of No. 1 R. R. Barrow, Inc., in section 41-17s-18e.

W. T. Burton, who has for the past several months had several geophysical crews working Lake Pontchartrain, Orleans Parish, staked location for his first test. It is No. 1 State Lake Pontchartrain, in Township 10s-13e, on the southeast side of the lake.

Along the Texas Coast

Along the Texas Coast, preparations were being made to test an interesting outpost well in the Fairbanks field, Harris County. The well is being drilled by the Carroll Oil Co. on the Ralph Johnston lease, several hundred feet west of Amerada Petroleum Corp.-Stanolind Oil & Gas Co. No. 1 Mills, the discovery well. The hole is bottomed at 6,864 feet and casing is being run to test a sand section logged at 6,839-49 feet. The discovery well was completed through perforations at 6,838-52 feet.

Locations were made in the field for two interesting outpost wells. Housch, Thompson & Schofield are moving in a rig for No. 1 J. Windorf, about a half mile southwest of production in Lot 33, G. Williams Survey, while north of production about 2,000 feet, Gem Oil Co. will drill No. 4 B. W. Reed, in the George Ayers Survey. Five wells were being completed at the close of the week. Amerada-Stanolind No. 1 Bullimore, W. K. Hamblen Survey, is bottomed at 6,844 feet, and 5½-inch casing has been cemented at 6,843 feet. Same companies' No. 1 Blanche Foley, east offset to No. 1 White, the most easterly well in the field, is attempting to shut off salt water accompanying the flow of oil through perforated casing at 6,831-50 feet. Same companies' No. 1 Post extended the field a short distance to the north and is flowing into pits from perforations at 6,838-51 feet. Mortex Oil & Gas Co. No. 1 Ley, the most southeasterly well drilled, J. Waught Survey, is being recompleted after it showed a high gas-oil ratio. Sand was logged at 6,815-19 feet. E. L. Smith and Ownby Drilling Co. No. 3 Meyers flowed 312 bbls. per day after perforating casing at 6,842-48 feet.

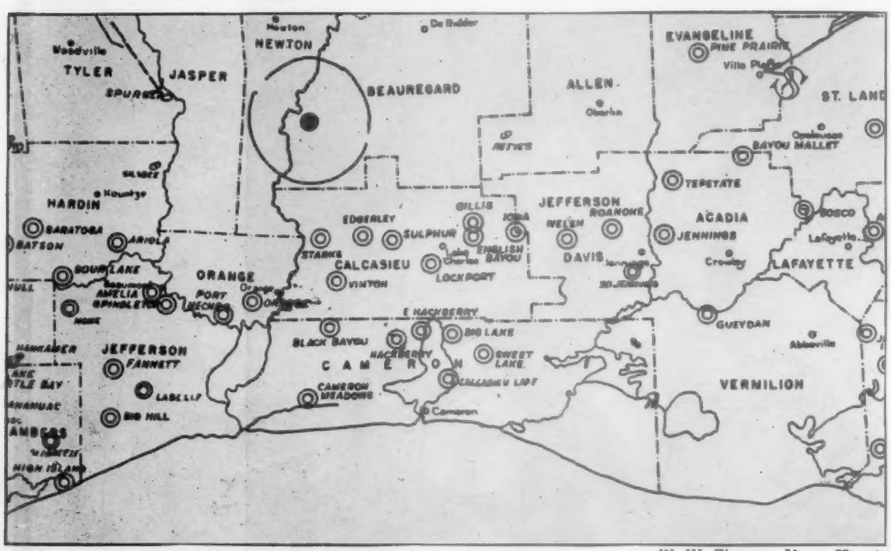
Two Wildcat Failures

Two interesting wildcats in Harris County were marked off the list as dry. In the Aldine area, Jack Frazier and others No. 1 Gillespie and Garnsey was abandoned at 7,785 feet. On the Ogburn Prospect, O. W. Killam No. 1 Hamblen, W.C.R.R. Survey 11, is bottomed at 7,015 feet and will be abandoned. The well is located south of No. 1 J. J. Sweeney, a recent dry hole. Sand at 6,657-69 feet, which is reported to have carried an odor of oil, tested salt water on a drill stem test. In the Crosby area, northeast of Houston, Merit Oil Co. is building derrick for No. 1 Guy Smith, in the center of a 25-acre tract, in the F Rankin Survey.

The Clinton field, Harris County, received its best shallow producer, as Stanolind Oil & Gas Co. No. 1 Velman Johnson, 425 feet north of No. 1 Barraco, flowed 462 bbls. in 24 hours through a quarter-inch choke. The completion was made from a screen setting at 3,825-33 feet, the total depth.

In the Cedar Point field, Galveston Bay, Standard Oil Co. of Texas and others No. 1 State, Tract 119, west offset to the discovery well, perforated casing at intervals from 6,040-98 feet, and the hole was being swabbed. Before casing was cemented for a production test, side wall cores were taken which showed several promising shallower sands. At 3,061 feet, the core showed 9 per cent saturation, at 4,470-80 feet,

(Continued on Page 150)



W. W. Zingery, Maps, Houston

Location of Republic Production Co. No. 1 Lutcher Moore Lumber Co., the discovery well of the Bancroft area, showing its relation to the Spurger and Villa Platte fields (indicated by arrows) and other fields along the Salt dome belt

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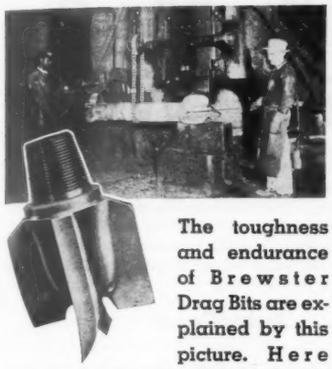

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Among Gulf Coast Drilling Contractors

Cron & Gracey have apparently opened an Edwards lime pool in Burleson County, as Red Bank Oil Co. No. 1 H. H. Coffield is cleaning into the pit showing 35-gravity oil along with considerable wash water. The well is flowing through 2-inch tubing swung at 6,157 feet, with the bottom of the hole at 6,171 feet. Fohs Oil Co. No. 4 State, Lake Long field, Lafourche Parish, is being completed at a total depth of 10,239 feet. Amerada Petroleum Corp. No. 1 Fournier, Villa Platte field, has been spudded, while six other Cron & Gracey rotaries are operating as follows: One at Clam Lake for Shell Petroleum Corp.; one at East Placedo for Stanolind Oil & Gas Co.; one at Midfield for Texas Co.; one at Hardin for Fohs Oil Co.; one at Tomball for Shell Petroleum Corp., and one at Dickinson for Stanolind Oil & Gas Co.

Smith & McDannald received contract from Pan American Production Co. for another well at the Port Barre field, St. Landry Parish; are moving in a rig to the Eureka field, Harris County, for Tide Water Associated Oil Co., and starting a well in the Hardin field, Liberty County, for themselves. The contractors' No. 1 Briton, Five Corners field, has been completed for an oil well and the rig is being moved to another location. Active operations are reported at Dickinson where three Smith & McDannald rotaries are operating for Pure Oil Co.; one at Hastings for Stanolind Oil & Gas Co., and at the Long Lake field for the Tide Water Associated Oil Co. Contract was recently received from Danciger Oil & Refining Co. for No. 1 Leona H. Carter, Pledger field, which was spudded during the week.

Nicklos Drilling Co. is nearing the 10,000-foot horizon on Continental Oil Co. No. 1 Vidrine, a south outpost in the Villa Platte field, Evangeline Parish. No. 1 Haas is drilling below 7,100 feet, No. 1 Hattie Haas is below 8,355 feet. All three operations are for Continental Oil Co. One operation is reported in the Valentine field for Pan American Production Co., while in the Lockport field, Calcasieu Parish, Continental Oil Co. and Nicklos Drilling Co. No. 1 J. H. Moss is drilling ahead below 3,855 feet.

Edwards Drilling Co. is rigging up in the East Telferner field for a third test, while at the Hardin and Dickinson fields, three operations are listed for Fohs Oil Co. and the Kenben Oil Co.

George Echols has four operations in the active Heyser field, Victoria and Calhoun counties. Two outfits are running for the Sinclair Prairie Oil Co., while two are operating for himself on the Lander and Bennett leases.

O. W. Dyer is moving a rig to Arkansas for the Atlantic Refining Co., while along the Gulf Coast he has six rotaries running for the same company. Two are located in the Dickinson field, two in the Hardin field and one at Barbers Hill.

Trinity Drillers, Inc., received contract for two wells to be drilled in the West Saxet and McFaddin fields. No. 11 McKinzie at West Saxet is being rigged up for Renwar Oil Corp., while No. 9-3 McFaddin is being started for the Transwestern Oil Co. Active operations include No. 1 Smith, No. 4 McKinzie, and No. 1 Rand Morgan for Phillips Petroleum Co. in the West Saxet field; No. A-450-23 Driscoll, for Continental Oil Co. in the Driscoll field, Duval County; No. 3 Garcia for Standard Oil Co. of Texas in the Alta Mesa field, Brooks County, and Coast Line Oil Corp. No. 1 State, located in Redfish Bay.

Allen & Morris received contract from Sinclair Prairie Oil Co. for the company's third test in Laguna Madre Bay offsetting the Flour Bluff field, Nueces County, and are rigging up in Refugio County for I. J. Allen No. 1 Rooke, J. M. Aldrete subdivision. Drilling continues below 8,965 feet in Continental Oil Co. and Sal Vieja Oil Co. No. 1 Garcia Land & Cattle Co., a projected 10,000-foot wildcat in Willacy County. In the Luby field, four Allen & Morris rotaries are operating for Seaboard Oil Co. on Nos. 19, 27, 25 and 22 Luby. In Jim Hogg County, Humble Oil & Refining Co. No. 1 Kelsey Bass, a wildcat, is drilling below 3,855 feet, while at the Chittim field, Maverick County, No. 1-A Annie E. Chittim is testing at a total depth of 5,879 feet.

In the Cordele field, Jackson County, H. J. Porter No. 2 J. W. Foust, west offset to the discovery well, tested salt water on a production test at 2,794-2,802 feet, total depth, and the hole has been plugged back to 2,689 feet, and casing is to be perforated in the discovery horizon at 2,652 feet. The same operators made locations for four additional wells. No. 1 Kern Ackley is in the A. Baker Survey, No. 1 Monia Pressley is an east offset to the discovery well in the Peter White Survey, No. 1 Woussi is a west offset to the discovery, and No. 1 R. Woussi is in the Peter White Survey.

In Waller County, Davis B. MacDaniel abandoned No. 1 H. C. Leverkuhn at 6,622 feet, and the rig is being moved due north for No. 1 Dinkins. The well was abandoned after the operator was unable to recover stuck drill stem.

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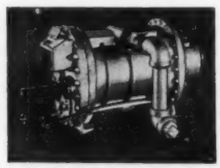

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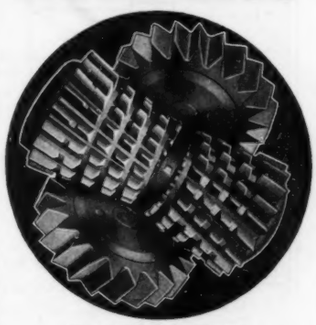

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North and East Texas

By
MITCHELL TUCKER

31 Completions in K. M. A.; Increase in Extension Work

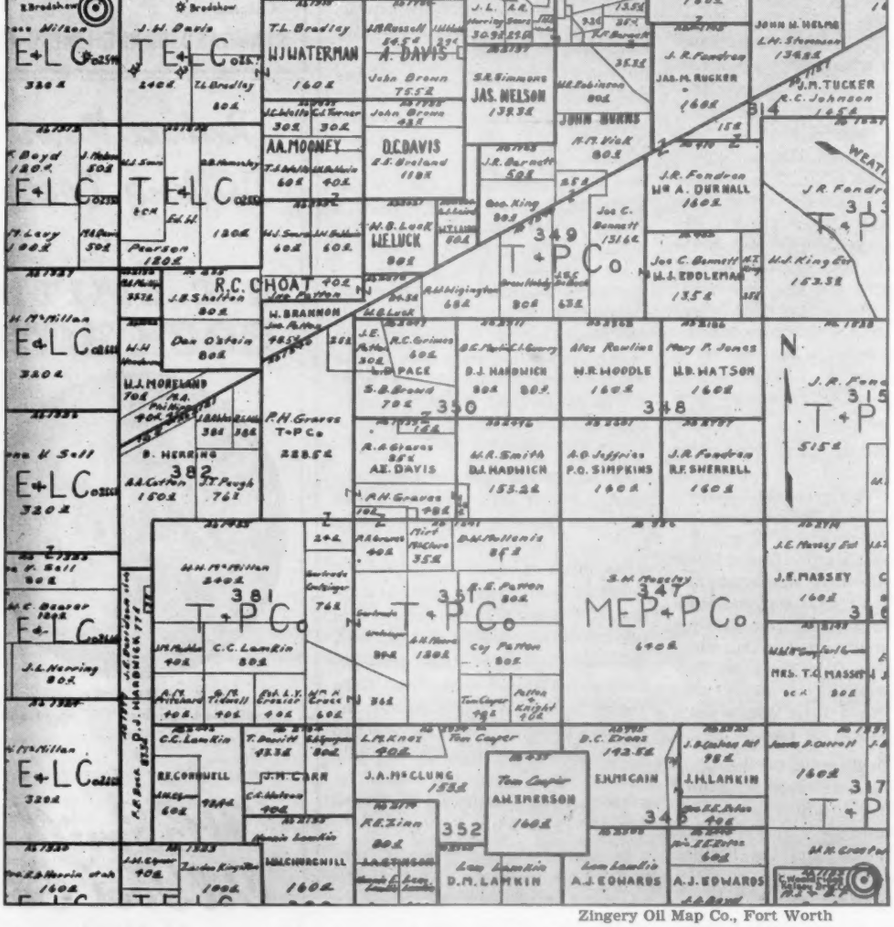
WICHITA FALLS, Tex., May 16.—During the past week 31 oil wells were completed in the K.M.A. pool in Wichita County, having an aggregate initial production of 22,071 bbls. There are now 66 locations staked in the field and 19 tests either rigging up or digging pits. The field has a total of 193 drilling wells and of this number 55 are drilling below 2,000 feet; 46 have set oil string; 29 are drilling plug and 30 are awaiting potential gauge.

The K.M.A. pool received its initial effect of the new Saturday shutdown when the Sinclair Prairie Marketing Co. rescinded its recently announced order cutting its field runs. The company's cut reduced the daily per well take from 58 to 43½ bbls. The order was lifted for the remainder of the month during the time of the two-day per week shutdowns. Officials of the company said that the extra day shutdown would offset the reduction and tend to correct the situation.

During the past week the Texas Pipe Line Co., buying approximately 90 per cent of the 20,000 bbls. daily output in the K.M.A. field, announced that it would accept no more connections for wells even on leases from which it now is taking oil. The company's action was seen as an attempt to halt drilling of unnecessary wells on leases already protected by production, and to prevent the drilling of inside wells which would force the drilling of offset wells.

An increase in extension activity was seen as production seemed assured in two outposts on the west side of the field. Shell Petroleum Corp. and Phillips Petroleum Co. No. 1 H. Riley Estate, Floyd Jordan Survey, Abstract 167, continued to core ahead below 3,850 feet at the close of the week, after having found saturated lime at 3,840-47 feet. The well is located about 1½ miles southeast of Boller & Griffin No. 1 Collins, extension well, and about 1½ miles northeast of the Geier Brothers & Jackson No. 1 Ancell, a dry hole, in the southwest corner of the field. About 1 mile northwest of this test, and in the Floyd Jordan Survey, P. G. Lake, Inc. No. 1 Riley cored saturation in the K.M.A. lime from 3,902-12 feet. Coring continued below that depth at the close of the week.

Madden & Goldsmith No. 1 Jackson, section 20, Block 4, Denton County School Lands, a wildcat in the territory between the K.M.A. and Panther pools, loomed as a failure. Location is in Wichita County about 5 miles southeast of K.M.A. production, 1 mile north of Holliday, and about 3½ miles north of the Panther pool, Archer County. The test was completed to contract depth of 4,500 feet and operators will either drill ahead to the Ellenburger, expected around 5,100 feet or plug back and test several showings in the Canyon lime from 2,641 feet to 2,718 feet.



Zingery Oil Map Co., Fort Worth

The territory between Fort Worth and Mineral Wells, Tex., particularly in Parker County, is scheduled to receive a wildcat play over the next few months. Two 6,000-foot tests are drilling in northwestern Parker County

Archer County

Possibility of a new deep Strawn oil pool in the west side of Archer County was seen when the Adams Oil Co. No. 1 T. Moer, section 21, Block 3, Clark & Plumb Subdivision, found oil sand at 4,119 feet. The well was drilled to a total depth of 4,165 feet and after an unsuccessful attempt to land an electrical surveying instrument on bottom, casing was cemented at 4,125 feet. Plug will be drilled in the next few days.

The finding of saturated oil sand in Sikes and others No. 1 Walter Ford well (formerly J. K. L. Oil Co.) gave new hope to a previously abandoned wildcat in the northern part of the county. The test is in the T. Cecil Survey, Abstract 982, 5 miles east of Holliday and about 5½ miles northeast of the Panther pool discovery well. The new operators, who took over the test after it had been abandoned at 3,766 feet, drilled deeper and penetrated a 7-foot section of saturated sand from 4,129-36 feet, 12 feet of lime, and then another 2-foot section of sand. Operators were planning to make an electrical survey of the hole, after which they will set casing and test.

The producing ability of Blackwell Oil & Gas Co. and Helmerich & Payne No. 2 Wilson, 2,000 feet southeast of the same operators' discovery well, was still unknown last week. Saturated sand was found at 5,107-16 feet. Due to the large amount of commercial drilling mud which was pumped into the hole while drilling in as a preventive against high gas pressure, the well has failed to make a steady flow.

Blackwell Oil & Gas Co. No. 1 McCrory, west offset to the deep Strawn Panther pool discovery well, drilled plug last week and made 500 bbls. of oil into tanks while drilling in to total depth of 3,820 feet. The well flowed an estimated 100 bbls. of oil an hour on initial gauges.

Three-quarters of a mile southeast of the discovery well, Ligon & Burns were preparing to drill plug in No. 1 Nichols, NE cor. section 30, A.T.N.C.L. Survey. The test cored rich oil sand at 3,870-88 feet and cemented casing at 3,866 feet.

Phillips Petroleum Co. increased their holdings in the North Texas area last week when they purchased 2,400 acres in the F. P. Haynes & Sons' block in the western part of Archer County. Included in the purchase was a wildcat drilling well, No. 1 C. A. Arthur, section 3, G.H.&H. Survey, drilling below 1,780 feet. The company purchased the territory for a reported $75,000, after having carried on seismograph explorations in the area.

EASTERN TEXAS FIELDS

DALLAS, Tex., May 16.—During the past week there were 31 new oil wells completed in the East Texas field for an aggregate hourly initial production of 1,804 bbls., 46 new locations were staked in the field last week and the total number of drilling wells now number 127.

Deep Tests

The deepest test ever drilled in East Texas, Humble Oil & Refining Co. and Gulf Oil Corp. No. 1 E. Robertson, M. Mann Survey, 2½ miles southeast of Longview in Gregg County, became the center of interest at the close of the week as it drilled below 10,180 feet in hard sand and shale. The Reynolds lime, found productive in South Arkansas, became the new objective last week as several showings of oil and good gas possibilities were passed up in the Glen Rose lime.

On the Kelsey dome in Upshur County, Tom Hunter and American Liberty Oil Co. No. 1 J. P. Carter, in the J. H. Fields Survey, 1 mile north of Kelsey, was drilling at the close of the week below 8,961 feet.

In Smith County, 10 miles east of Tyler, H. L. Hunt and others No. 1 S. H. Bradley, T. P. Payne Survey, was pulling on drill pipe stuck about 3 feet off bottom. Total depth is 7,528 feet.

Houston County

The new Navarro Crossing oil pool in northwestern Houston County received, last week, the first location of an extensive drilling campaign planned for the area. Humble Oil & Refining Co. staked location for No. 1 H. H. Dailey and F. E. Taylor in the J. G. Thompson Survey, approximately 3,250 feet south and 3,350 feet west of the discovery well in the pool. The second producer for the pool is expected as Humble Oil & Refining Co. No. 1 Jim Burns, J. G. Thompson Survey, southwest offset to the discovery, was waiting on cement after landing 5½-inch casing at 5,875 feet. The well logged 12 feet of oil sand after topping the Woodbine series at 5,773 feet. Two locations west of the discovery well, Sun Oil Co. No. 1 R. S. Daily, in the J. G. Thompson Survey, was drilling at the close of the week below 2,580 feet.

Flag Lake Pool

The Flag Lake pool of northwestern Henderson County, received added stimulation last week when a new location was staked and an outpost well entered the critical stages. Texas Co. No. 1 Nolan, about 1½ miles southwest of the pool proper, was coring ahead below 3,026 feet in sand expecting saturation within the next few feet. The test encountered the Woodbine series at 2,889 feet and took several cores below that depth, however, none yielded oil. The outcome of this test should gauge further development on the south side of the pool. Last week, Richards & Holloway made location for No. 1 J. P. Larkington, W. K. Newell Survey. The location is 660 feet southwest of the Texas Co. No. 1 Nolan.

Woodbine Failures

Two East Central Texas Woodbine wildcats were recorded as dry last week. In the Procella area of northern Houston County, Peyton Brothers No. 1 Daniels, in the J. M. Procella Survey, 1 mile north of the discovery well on the structure drilled by H. L. Hunt, was abandoned last week after drilling into a salt water sand at 6,042 feet.

In Cherokee County, Comrade Oil Co. No. 1 J. M. King, William Bartee Survey, 5 miles west of Rusk, was abandoned as dry last week after topping the Woodbine at 5,065 feet and drilling to 5,486 feet, total depth.

EAST TEXAS FIELD COMPLETIONS

(One-hour gauges)

Gregg County—Longview Area

T. J. Carter No. 4 Anderson, 3,490-3,531 feet, 100 bbls. Lechner-Hubbard No. 6-C J. B. Doby, 3,488-3,511 feet, 88 bbls. W. L. McCurdy & Carr No. 3 G. W. Richey, 3,518-75 feet, 150 bbls. Magnolia Petroleum Co. No. 11 R. L. Saulter, 3,631-40 feet, 80 bbls. Stanolind Oil & Gas Co. No. 15 H. Kee, 3,508-3,607 feet, 58 bbls.; No. 7-A E. L. Walker, 3,565-69 feet, 64 bbls. Tide Water Oil Co. No. 45 Lake De Vernia, 3,495-3,530 feet, 72 bbls. Western States Realty Co. No. 6 Booknight, 3,605-24 feet, 60 bbls.

Gregg County—Kilgore Area

Falvey, Samples & Smith No. 7 R. Gray, 3,640-41 feet, 80 bbls. Gulf Oil Corp. No. 23 R. H. Still, 3,501-44 feet, 30 bbls. Hamil & Smith No. 5 Knowles, 3,540-48 feet, 35 bbls. T. D. Humphreys No. 26 A. Spear, 3,545-71 feet, 56 bbls. T. L. James No. 20 L. Lacey, 3,528-3,600 feet, 70 bbls. T. W. Lee No. 17 J. R. Carter, 3,588-89 feet, 30 bbls. B. De Mayo No. 2 S. G. Andrews, 3,635-45 feet, 60 bbls. Magnolia Petroleum Co. No. 20 L. A. Griffin, 3,581-3,608 feet, 3 bbls. Roy Reynolds No. 4 Z. Elders, 3,548-65 feet, 42 bbls. Shell Petroleum Co. No. 17 P. M. Bates, 3,545-3,618 feet, 50 bbls.; No. 19-A Douglas, 3,592-92½ feet, 38 bbls.; No. 32-A B. F. Laird, 3,533-3,601 feet, 56 bbls.

Rusk County—Joiner Area

Amerada and Deep Rock No. 33 Stovall, 3,656-88 feet, 50 bbls. Atlantic Refining Co. No. 11 J. E. Arnold, 3,635-3,730 feet, 35 bbls. Ebony Oil Co. No. 11 Deason Bros., 3,657-87 feet, 80 bbls. Gulf Oil Corp. No. 20 E. E. Thrash, 3,742-50 feet, 40 bbls. Humble Oil & Refining Co. No. 72-A M. and R. Knagerga, 3,602-02½ feet, 75 bbls. Hunt Oil No. 9 Plowman, 3,740-58 feet, 60 bbls. Magnolia Petroleum Co. No. 9 C. D. Ashby, 3,611-40 feet, 20 bbls. Ohio Oil Co. No. 88 M. M. Cross, 3,637-57 feet, 22 bbls.

Upshur County

Humble Oil & Refining Co. No. 41 I. D. Smith, 3,611-50 feet, 40 bbls. Mudge Oil Co. No. 18-A J. W. Free, 3,646-72 feet, 120 bbls. Phillips & Dean No. 2 Everett, 3,632-33 feet, 40 bbls.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

In the Cayuga field, Harper & Turner No. 1 J. D. Loper, 3,945-4,072 feet, 45 bbls.

Houston County

In the Kitrell field, McAlpine Oil Co. No. 1 Long Leaf Lumber Co., dry and abandoned at total depth of 1,315 feet.

Titus County

In the Talco field, Humble Oil & Refining Co. No. 4 W. E. Wilson, 4,231-70 feet, 155 bbls.

NORTH TEXAS COMPLETIONS

Archer County

Blackwell Oil & Gas Co. and others No. 1 L. F. Wilson, 3,851-65 feet, 1,150 bbls. T. H. Brown and others No. 3 Mrs. Anna B. Wallace, 1,088-1,100 feet, 15 bbls. L. T. Burns No. 1 W. L. King, 1,325 feet, dry. C. T. Hedges No. 12 J. F. Rogers, 1,325-46 feet, 15 bbls. Superior Co. No. 1 M. Phillips, 1,176 feet, dry.

Rex D. Smith No. 3 W. P. Ferguson, 539-48 feet, 3 bbls. C. W. Snoddy No. 1 Jones, 4,502 feet, dry.

Clay County

Bridwell Oil Co. No. 11 T. C. Thornberry, 1,074-1,114 feet, 40 bbls. Kimmell Lee & Co. and others No. 4 Mrs. L. Firestone, 1,091-1,115 feet, 260 bbls. W. P. Luse No. 1 K. N. Hapgood, 4,502 feet, dry.

Bridwell Oil Co. No. 13 T. C. Thornberry, 1,068-1,115

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feet, 295 bbls. Kimmell Lee & Co. No. 6 Mrs. Lou Firestone, 1,107-25 feet, 216 bbls. Loesche-Gorman No. 2 Louella Thornberry, 1,091-1,121 feet, 250 bbls.

Cooke County

H. F. Couch No. 1 P. Bindle, 1,608 feet, dry. Gill & Witherspoon No. 3 Mrs. O. Wilson, 1,005-18 feet, 8 bbls. Kewanee Oil & Gas Co. No. 26 Hyman Lanier A, 1,501 feet, dry. F. W. Merrick, Inc. No. 5 J. H. Otto, 801-901 feet, 10 bbls. Mudge Oil Co. No. 25 A. Johnson, 1,192-1,227 feet, 85 bbls. Texas Co. No. 3 F. J. Trubenbach B, 918-36 feet, 30 bbls.; No. 7 Tony Trubenbach, 737-56 feet, 28 bbls. Trumter Oil Co. No. 13 G. T. Andress, 760-88 feet, 12 bbls.

Hudspeth Oil Co. No. 8 F. J. Trubenbach B, 912-18 feet, 35 bbls. Kerlyn Oil Co. No. 5 C. B. Blagg, Jr., 2,013-38 feet, 36 bbls.; No. 7 C. B. Blagg, Jr., 2,041 feet, dry. A. D. Robinson No. 16 J. H. Otto A, 798-886 feet, 128 bbls. Scott and others No. 1 Tony Trubenbach, 904 feet, dry. Trumter Oil Co. No. 14 G. T. Andress, 1,313-23 feet, 75 bbls.

Jack County

Benoil Co. No. 1 A. B. Kuykendall B, 2,983-3,142 feet, 750 bbls. Cochburn Oil Co. No. 3 S. M. Mantooth, 3,228-45 feet, 210 bbls. Danciger Oil & Refining Co. No. 1 S. J. Bailey, 2,828-55 feet, 10 bbls. Gilmore No. 3 William Hanna, 349 feet, dry. Taubert & McKee No. 1 R. H. Eatherly, 1,860 feet, dry.

G. C. Gilmore No. 1 Lester Carter, 290 feet, dry. W. H. Hammon No. 4 G. C. Booth 2,926-59 feet, 200 bbls. Hill & Hill No. 2 A. B. Kuykendall, 2,948-3,113 feet, 350 bbls. L. S. Luke No. 1 H. M. Simpson, 3,152 feet, dry. Roy Rogers, Jr., No. 1 Shown, 360 feet, dry. Royal Petroleum Co. No. 1 Mrs. R. G. Moore, 3,273 feet, dry. Showers & Moncrief No. 1 Lawrence, 3,112-63 feet, 458 bbls.

Montague County

Holcomb & Yingling No. 2 Mrs. A. B. Hinton, 763-92 feet, 10 bbls. M. Holmes No. 1 F. M. O'Neal, 2,103 feet, dry. E. J. Ruwaldt No. 1 J. A. Hoffman, 2,506 feet, dry. Seitz & Comegys No. 3 J. W. King, 1,739-44 feet, 115 bbls.

Holcomb & Yingling No. 1 A. B. Hinton, 749-82 feet, 15 bbls.; No. 2 A. B. Hinton, 751-91 feet, 3 bbls.

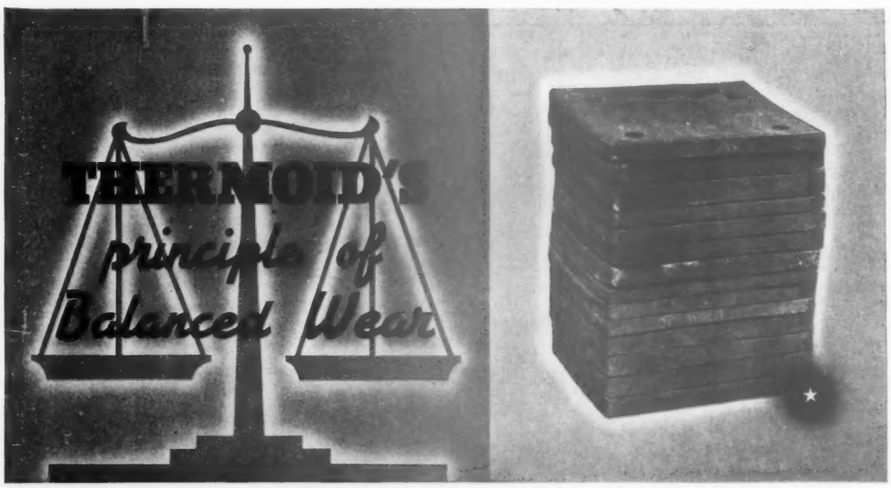
Wichita County

Mae Belcher No. 1 J. F. and Ora Love, 3,019 feet, dry. Blackwell Oil & Gas Co. No. 1 Hodges, 3,700-3,807 feet, 960 bbls. D. H. Bolin No. 1 J. L. and T. J. Waggoner, 4,071 feet, dry. Bolin & Whittington No. 2-A J. L. and T. J. Waggoner, 914-29 feet, 22 bbls. Bridwell Oil Co. No. 1 Mrs. Anna Mangold, 3,777-3,822 feet, 760 bbls. R. B. Bryant No. 1 G. L. Nance, 3,699-3,868 feet, 560 bbls. Burk Royalty Co. No. 1 W. W. Overbey, 3,865-4,185 feet, 600 bbls. Chapman & McFarlin No. 3 Mrs. Anna Mangold, 3,768-3,836 feet, 560 bbls. Clark & Cowden No. 1 W. T. Waggoner, 3,840 feet, dry. Consolidated Oil Co. No. 7 W. P. Ferguson, 3,711-3,815 feet, 1,590 bbls. Continental Oil Co. No. 15 T. L. Burnett and others B, 1,708 feet, dry. G. Cooper No. 50 J. L. and T. J. Waggoner, 156 feet, temporary abandoned. C. O. Davis No. 2 Mrs. Anna Mangold, 3,721-3,840 feet, 1,920 bbls. Deep Oil Development Co. No. 1 J. R. Pace, 3,688-3,892 feet, 1,328 bbls. E. C. Oil Co. No. 2 Mrs. Anna Mangold, 3,784-3,895 feet, 510 bbls. C. A. Everts No. 1 First National Co., 3,663-3,817 feet, 1,096 bbls. Hammon, Hanlon & Buchanan, Inc., No. 4 Fassett & Tuttle, 2,016 bbls. Lewis Production Co. No. 1 Mrs. Anna Mangold, 3,725-3,845 feet, 900 bbls. Magnolia Petroleum Co. No. 4 Barton, 3,791-3,841 feet, 600 bbls. Manson Oil Co. No. 3 Sue Mitchell, 3,875-3,923 feet, 880 bbls.

Mitchell Oil Co. No. 1 Sue Mitchell B, 3,856-94 feet, 1,152 bbls. Mogren & Anderson No. 3 C. A. Mertens, 940-50 feet, 73 bbls. Murray & Griffey and others No. 2 J. R. Pace, 3,744-3,893 feet, 328 bbls. Hundro & Staley No. 2 First National Co., 3,597-3,861 feet, 760 bbls. Petroleum Producers Co. No. 88 First National Co., 3,684-3,878 feet, 604 bbls. Pois & Schulz No. 11 Ed Foster J, 906-12 feet, 140 bbls. D. W. Power and others No. 1-A L. C. Denny, 675 feet, dry. George Proctor No. 30 Ed Foster A, 1,603-19 feet, 550 bbls.; No. 31 Ed Foster A, 1,548 feet, dry. George B. Ray No. 3 Sue Mitchell, 3,798-3,876 feet, 792 bbls. Reno Oil Co. No. 16 M. A. Eads, 1,962 feet, dry. Ryan Consolidated Petroleum Co. No. 128 G. L. Nance, 3,795-3,908 feet, 128 bbls. Showers & Moncrief, Inc., No. 1 W. P. Ferguson, 3,657-3,808 feet, 1,640 bbls. J. B. Stoddard No. 1 J. A. Fisher, 3,727 feet, dry. Sunray Oil Co. No. 2 First National Co., 3,770-3,874 feet, 1,120 bbls. Trico Oil Co. and others No. 2 W. L. Hodges, 3,812-3,941 feet, 288 bbls. Wilson & Ligon No. 1 Sue Mitchell B, 3,844-67 feet, 960 bbls.; No. 2 Sue Mitchell B, 3,821-67 feet, 724 bbls.

D. H. Bolin No. 1-A Waggoner, 923-36 feet, 12 bbls. Bridwell Oil Co. No. 2 First National Co. B, 3,654-3,869 feet, 576 bbls.; No. 3 J. R. Pace, 3,655-3,848 feet, 1,188 bbls. Burns & Omohundro No. 15 Waggoner, 1,461-1,502 feet, 75 bbls. A. L. Cato No. 3 J. A. Kamp, 3,678-3,757 feet, 1,120 bbls. Consolidated Oil Co. No. 5 W. P. Ferguson, 3,700-3,800 feet, 4,290 bbls. G. W. Cooper No. 49 Waggoner, 3,728-3,790 feet, 864 bbls. Dalport Oil Co. No. 1 Munger, 3,760-3,895 feet, 760 bbls. Deep Oil Development Co. No. 17 Munger, abandoned location. E-C Oil Co. No. 6 Lebus, 3,740-3,836 feet, 600 bbls. M. T. Flanagan No. 1 J. E. Rollar, 4,064 feet, dry. Golding & Cochran No. 24 J. L. and T. J. Waggoner, 3,791-3,839 feet, 696 bbls. W. B. Hamilton No. 1 N. H. Martin and others B, 3,692-3,820 feet, 616 bbls. W. H. Hammon No. 3 Sue Mitchell B, 3,820-3,880 feet, 216 bbls. Hanlon-Buchanan, Inc., No. 1 Fassett & Tuttle, 3,939-4,006 feet, 72 bbls. Heyser, Heard & Clardy No. 2 Fassett, 3,991-4,039 feet, 40 bbls. Kadane-Griffith Oil Co. No. 6 Mrs. Anna Mangold A, 3,703-3,835 feet, 528 bbls. C. F. Kelp No. 1 fee, 2,038 feet, dry. King Oil Co. No. 2 Waggoner, 3,740-3,810 feet, 712 bbls. Lewis Production Co. No. 2 Mangold, 3,720-3,845 feet, 536 bbls.; No. 6 Wichita National Bank, 3,688-3,793 feet, 640 bbls. Manson Oil Co. No. 4 Mitchell, 3,883-3,932 feet, 720 bbls.; No. 1 Sue Mitchell B, 3,900-3,943 feet, 480 bbls. Melat & Graham No. 3 Munger A, 3,661-3,860 feet, 340 bbls. Morgan Brothers & Waggoner, Jr., No. 1 Waggoner, 3,792-3,835 feet, 1,096 bbls.; No. 2 Waggoner, 3,754-95 feet, 1,216 bbls. Mulberry Oil Co. No. 2 Mrs. Anna Mangold, 3,741-3,843 feet, 644 bbls. Palmer & Chenault, Inc., No. 2 Waggoner, 3,677-3,832 feet, 552 bbls. Peery & Woody No. 1 Bishop, 3,860-4,053 feet, 6 bbls. Pois & Schulz No. 10 Foster J, 1,254-67 feet, 191 bbls.; No. 12 Foster J, 1,279 feet, dry. Retsal Oil Co. No. 2 J. F. Miller B, 3,648-3,847 feet, 568 bbls.; No. 1 J. A. Watkins, 3,891-3,980 feet, 3 bbls. Staley Oil Co. No. 5 W. P. Ferguson, 3,786-3,853 feet, 800 bbls.; No. 7 First National Co., 3,762-3,885 feet, 600 bbls. Sunray Oil Co. No. 2 First National Co., 3,762-3,880 feet, 350 bbls. Texas Co. No. 27 First National Co., 3,603-

(Continued on Page 141)



SETS UP REAL ECONOMY RECORDS

Thermoid doesn't stop at simply making the best products that engineering skill and experience can devise. No better evidence of this can be offered than Thermoid's consistent promotion of the principle of balanced wear in braking oil well hoists.

In making engineering recommendations on such installations, Thermoid invariably specifies first, the use of long-lived Thermoblocks on the high pressure end of the band to resist a fast rate of wear . . . and second, Thermoid BX Heavy Duty Blocks (which have high holding power) on the balance of the band to equalize the wear and to improve stopping power. Such recommendations increase the material's performance and effectiveness, in addition to cutting down costs on installations.

Study the performance records of Thermoid products and Thermoid engineering service in any oil field. See for yourself what they mean in actual savings.

★ **DRILLED AND CORED 3 DEEP WELLS AND BLOCKS NOT YET 50% WORN OUT**

The blocks pictured above were removed for study in field checking Thermoid's principle of balanced wear. Blocks consist of Thermo-blocks used on the high pressure end of the band (shown at bottom of pile) . . . Thermoid BX Heavy Duty Blocks on the rest of the band locations. Most people agree that coring a deep well is equivalent to drilling two such wells. Study the footage tabulations and notice how evenly worn—how little worn the brake blocks are. There are thousands more feet of drilling and coring in every one.

FOOTAGE TABULATION

WELL	DEPTH
Well No. 1	8200 ft.
Well No. 2	8200 ft.
Well No. 3	9200 ft.
Well No. 4 (When blocks removed)	1200 ft.
	26,800

ROTARY HOSE
AIR STEAM WELDING
REFINERY HOSE
PACKINGS
FLAT AND V BELTS
BRAKE LININGS
AND BRAKE BLOCKS

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INTERNATIONAL PETROLEUM EXPOSITION TULSA MAY 14-21

North Louisiana, Arkansas

By
GEORGE WEBER

Buckner Pool's Second Well Starts at 94 Bbls. Per Hour

SHREVEPORT, La., May 16.—The outcome of the tri-state area's most interesting current test was in question late in the week, as Standard Oil Co. of Louisiana No. 1 Phillips in the Village area of Columbia County, Arkansas, continued to core ahead. In addition to the attention centered on Village, the Buckner field of the same county commanded interest with two tests on the pay.

In Louisiana, a number of deep tests are being watched with considerable interest, since they stand to show chances of deeper production in key areas. Most closely watched is the Magnolia Petroleum Co. No. 1 Sexton Unit in Shongaloo, which passed the 10,000-foot mark in the past week, making the second test in North Louisiana now active below that depth.

Outposts were directing interest to Cotton Valley and Sugar Creek, and a south outpost to the Jefferson field of Marion County, Texas, was staked during the week. Pipe line proration and state reductions in allowable have resulted in declined crude production generally, but the Lisbon field was granted a larger outlet by increased purchases by its principal pipe line.

Village Test

The Standard Oil Co. No. 1 Phillips in section 15-17-19, Columbia County, South Arkansas, failed to show the expected amount of saturation in the Big or Smackover lime. The test cored the top of the lime last week and found some saturated oolitic lime below 7,380 feet. Continued coring showed dense lime. Following a failure of the seat in the first drill-stem test, the operators made a test at 7,351-95 feet. The working pressure was 45 pounds, and after three minutes the tool was closed and reseated. It was again opened for two minutes showing 75 pounds pressure when the by-pass valve cut out. Recovery was 1,000 feet of gas-cut mud.

Operators cored soft oolitic lime with a gas and distillate odor at 7,419 feet and ran a Schlumberger survey. Instead of setting casing as previously planned, the test will be carried 100 feet deeper, at which depth a decision will be made on what the further procedure will be.

This disappointing outcome at Village was partially offset by the completion of a very good producer in the Buckner field, to the northwest. There Standard Oil Co. No. 1 Waters, a west offset to No. 1 McKean, the discovery well, set 7-inch casing at 7,193 feet, total depth 7,259 feet. The well was allowed to flow on open choke for three hours, and it gauged an average of 94 bbls. per hour. After pinching down to a one-eighth inch choke, the well was making 200 bbls. per day at latest reports, with tubing and casing pressures equalized at 700 pounds. The well will be produced at this rate, as are the other wells completed in the field by Standard. Although no allowable production has been set at Buckner, a hearing to be held in El Dorado shortly will consider the placing of a suitable allocation of production in the field.

Schuler, the largest field in the Big lime trend of South Arkansas, was producing under greatly reduced allowable in the past week. The Jones sand, the production of which was reduced by the Board of Conservation on May 1, showed a daily average flow of 6,185 bbls., or less than the allowable. Jones sand wells, which were produced at averages ranging around 800 bbls. per day in February, are making an average of 172 bbls. daily at present, less than those in the shallow Morgan sand which is unprorated. Greatly reduced purchases of Lion Oil Refining Co. in the field have been partly offset by the extension of the gathering system operated by the Root Petroleum Co., only other purchaser in the field, and during the past week, the two companies' daily takings were equalized at 4,660 bbls. each.

Cotton Valley

The Cotton Valley field of Webster Parish was extended a short distance southeast during the past week by completion of Ohio Oil Co. No. 1. The test cored the Bodcaw sand at 8,434-74 feet, and is bottomed at 8,487 feet. Initial production was 612 bbls. of distillate and an estimated 5,000,000 feet of gas per day through a three-eighths inch choke, with tubing pressure 2,450 pounds and casing pressure 2,600 pounds. Offset requirements in the Bodcaw and Holloway sands have brought the drilling activity at Cotton Valley to a new high, and it is the most active field in the district. During the week Hunt Oil Co., which recently bought into production in the field, increased its holdings by acquiring the NE NE SE section 33, and the NW SW section 34.

In Claiborne Parish the Sugar Creek field has two important drilling tests. Union Producing Co. No. 2 Brownfield, the deepest test in the district, has plugged back from a total depth of 10,759 feet to 10,561 feet to correct a crooked hole, off 5 degrees at the bottom. The crew set 7-inch casing last week at 10,561 feet. Geologic information is not being made public.

The Union Producing Co. No. 1 Coleman, northwest of present production in the Sugar Creek field, found sand at 5,553-59 feet and another section at 5,705-13 feet, both sands showing oil. Latest reports were that the hole was being reamed for a drill-stem test.

Shongaloo Test

In the old shallow Shongaloo gas field of northern Webster Parish, Louisiana, Magnolia Petroleum Co. is drilling in black shale below 10,096 feet. The test is expected to top the Big lime at any time. At 10,031 feet this week a tight calcareous sand was cored showing a slight gas odor. The wildcat will be carried to the Big lime, or its equivalent. Importance of the test lies in its location south of the trend which has been opened in the lime in South Arkansas. Geologic information of considerable value is being obtained in the deep well.

Lisbon Production

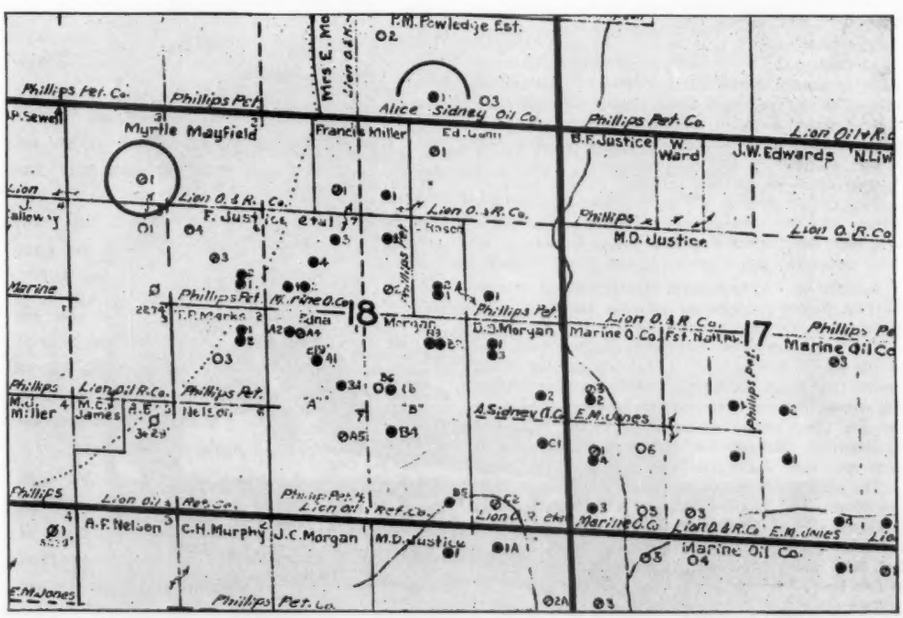
The Lisbon field of Claiborne and Lincoln parishes is becoming more active weekly through entry of new drilling operators, and the return of former ones. Although the field allowable was cut this month following a reduction in crude purchases by the Caddo Crude Oil Purchasing Co. several weeks ago, the situation improved for producers this week, when the Caddo announced resumption of former purchasing schedules.

During the week ending May 10 the Caddo ran 68,222 bbls., representing a daily average of 9,746 bbls. or 58 bbls. per day per well, and the Gulf Pipe Line Co., only other purchaser in the field, ran a total of 9,046 bbls. or 1,292 bbls. daily or 40 bbls. per day per well.

Rodessa Completions

New well completions continued to run high in the Marion County sector of Rodessa this week, with a total of five. Outstanding development of the week in that field was the staking of Arkansas-Louisiana Gas Co. No. 1 Johnson, in the Alexander Johnson Survey. The new test is located 1 mile south of the same company's No. 1 Pitts which was completed last week as a 1½-mile extension to the field, producing gas from the Hill sand, which was not previously proven productive southwest of the Cass County-Caddo Parish line in Rodessa proper. Due to the complicated

(Continued on Page 150)



Globe Map Co., Shreveport

The north edge of the Schuler field, Union County, Arkansas, continues to show a thickening of the Jones sand in wells which run higher than those to the south and east. The latest outpost to core the Jones, Lion Oil Refining Co. No. 1 Mayfield, has Jones sand from 7,520-94 feet and will probably make one of the best wells in the field

Rocky Mountain Area

By
T. R. INGRAM

Light Oil Field Is Opened in Deep Lakota Sand, Wyoming

DENVER, Colo., May 16.—A new light oil field in Wyoming, only 14 miles from Casper, was discovered in a wildcat drilled by the General Petroleum Corp. on the Cole Creek structure between the Salt Creek and Big Muddy fields. A drill stem test at 8,019 feet showed for 30 bbls. an hour. The Murphy Oil Co. has resumed operations on the Quealy dome with two locations. Cunningham Oil Co., Inc., let contract for a Sundance sand test on the Oil Springs structure in Carbon County. One small producer and one dry hole were completed in the Osage field and an 8-bbl. well was brought in at 730 feet in the old Upton-Thornton district.

Colorado had one new operation in Huerfano County and no completions.

Santa Rita Oil & Gas Co. No. 1 Jordan, in south Cut Bank, Montana, swabbed 210 bbls. in 15 hours. The Kevin-Sunburst field has promise of a record well for recent years in B. A. S. Aronow No. 2 Government, which flowed 35 bbls. per hour. One new operation was reported in Kevin-Sunburst.

NEW MEXICO

The spudding of an interesting wildcat in Quay County, discovery of a new pay sand and completion of a pool opener in Eddy County were highlights of activity in New Mexico oil fields the past week.

H. M. McGee No. 1 Chapman, C. NW NW section 9-9n-35, is the Quay County outpost. Location is in the northern part of the Permian Basin region of eastern New Mexico, in an area that has been the scene of a considerable leasing play in recent months. It was below 700 feet at last report.

Premier Petroleum Co. No. 1 Beeson, NE SE SE section 28-17-30, uncovered a sand pay nearly 1 mile south of the Jackson area, Eddy County, where lime is the major producing horizon. It flowed 77 bbls. of oil naturally through tubing in 24 hours, but was not a completion. It had sand pay from 3,240 feet to 3,250 feet, total depth.

The Eddy County pool opener was R. A. Shugart No. 1 Coulthard, C NW SW section 35-18-31, about 10 miles southeast of the Jackson field. It pumped 42 bbls. of oil daily through 2-inch tubing, after shooting. Top of pay was 3,440 feet, total depth 4,088 feet, plugged back to 3,920 feet to shut off water near bottom of hole. It was a completion.

Two other completions in Eddy County were reported. Carper Drilling Co. No. 3 Gissler, NE SE NW section 23-17-30, Jackson pool, topped pay at 3,362 feet, total depth 3,425 feet, and flowed 90 bbls. of oil daily through tubing.

Repollo Oil Co. No. 2-A Parke, NW NW NE section 22-17-30, flowed 364 bbls. of oil daily through tubing from pay found at 3,366 feet, total depth 3,439 feet.

The largest producer completed the past week was in the South Eunice district, Lea County, at Texas Pacific Coal & Oil Co. No. 11-A State, Account 2, C SE NE section 7-22-36. It flowed 100 bbls. of oil an hour through 1-inch choke on tubing, naturally. Gas was estimated at 3,250,000 feet. Lime pay was found at 3,785 feet, total depth 3,845 feet.

The only producer completed in the Vacuum pool, Lea County, was Magnolia Petroleum Co. No. 2-K State, C NE SE section 31-17-35, one-fourth mile east of the southeast edge of the pool. Pay was found at 4,352 feet, total depth 4,750 feet. It flowed 260 bbls. of oil in five hours through 1-inch choke on tubing.

Two other Lea County completions were reported. Continental Oil Co. No. 4-B-23 Reed, C E half NW NE section 23-20-36, Monument district, flowed 456 bbls. of oil daily through three-quarter inch tubing choke. Gas gauged 981,000 feet. It had pay at 3,800 feet, total depth 3,877 feet.

Continental Oil Co. No. 1-F-1 State, C SW SW section 1-21-36, topped pay at 3,630 feet, total depth 3,935 feet, and produced 480,000 feet of gas.

Lea County

Addison Oil Co. No. 2 Knight, C SW NW sec. 27-24-37 Drlg. 545.
Amerada Pet. Corp. No. 3 Laughlin, C NW NE sec. 9-20-37. T.D. 2,855 ft.; set 8-in. 2,573 ft.
Amerada Pet. Corp. No. 2 State VA, C NW SW sec. 23-17-34. Drlg. 3,280 ft.
Amerada Pet. Corp. No. 2 James Stuart, C W½ SW NW sec. 14-25-37. T.D. 1,096 ft.
Anderson-Prichard Oil Corp. No. 2 Langlie, SE sec. 8-25-37. Drlg. 3,420 ft.
Anderson-Prichard Oil Corp. No. 4 Langlie, NE SW NE sec. 8-25-37. T.D. 3,477 ft.; F. by heads; shot; C.O.
Anderson-Prichard Oil Corp. No. 1 Wells, C SE SE sec. 5-27-37. Drlg. 3,610 ft.
Anderson-Prichard Oil Corp. No. 2 Wells, C SW SE sec. 5-27-37. C.&P.
Atlantic Ref. Co. No. 1 State, C SE SW sec. 32-24-37. Drlg. 1,500 ft.
Cities Service Oil Co. No. 3-A Closson-A, C NE SE sec. 18-22-36. T.D. 3,760.
Cities Service Oil Co. No. 1-H State, C NE NE sec. 17-22-36. T.D. 3,884 ft.; prep. to deepen.
Continental Oil Co. No. 2-F-1 State, C SW NE sec. 1-21-36. Drlg. 3,350 ft.
Continental Oil Co. No. 1-J-2 State, C NW NE sec. 2-22-36. Drlg. 3,280 ft.
Continental Oil Co. No. 1-B-15 Britt, C W½ NW NW sec. 15-20-37. Drlg. 3,722 ft.
Continental Oil Co. No. 2-A-20 Jack, C SE SE sec. 20-24-37. Drlg. 3,440 ft.; S.D. 3,358-66 ft.
Continental Oil Co. No. 3 Jack, C SE NE sec. 20-24-37. Cellar, pits.
Continental Oil Co. No. 1-A-31 Marsh, SE sec. 31-20-39. Wildcat; T.D. 4,346 ft.; C.O.; cmtg.
Continental Oil Co. No. 5 Reed, C W½ NE SE sec. 23-20-36. Drlg. 1,670 ft.
Continental Oil Co. No. 2 Sanderson, NE NE SW sec. 14-20-36. T.D. 245 ft.; rng. csg.
Continental Oil Co. No. 9 Sanderson, NE SE NW sec. 14-20-36. Spudding.
Continental Oil Co. No. 4-E-17 State, C SW NW sec. 17-22-36. T.D. 3,724 ft.; W.O.C.
Continental Oil Co. No. 1-I-16 State, C NW NW sec. 16-18-35. Drlg. 4,810 ft.
Cranfill & Germany No. 1 Weir, C NE NE sec. 15-20-37. T.D. 4,210 ft.; S.D.O.
Culbertson & Irwin No. 4 Alston, SW SE NW sec. 26-25-37. Drlg. 2,300 ft.
Culbertson & Irwin No. 1 Dabbs, NE NE NW sec. 35-25-37. Drlg. 810 ft.
Culbertson & Irwin No. 6-A Humphrey, NE SW SE sec. 3-25-37. Drlg. 3,212 ft.
Culbertson & Irwin No. 2 Liberty Royal, C N½ SW NW sec. 3-25-37. T.D. 3,170 ft.; W.O.C.
Danglade & Clower No. 1 Giier, C SW NE sec. 32-22-37. T.D. 3,680 ft.; bailed 100 B.O. in 48 hrs.; tstg.
L. E. Elliott No. 2 Elliott, NE NW SE sec. 26-20-36. T.D. 3,670 ft.; bailing hole.
A. R. Eppenauer No. 1 Stuart, NW NE NE sec. 22-25-37. T.D. 3,373 ft.; flwd. 15 B.O.P.H. at 3,321 ft.
J. E. Farrell No. 2-C Walden, C SE SW sec. 15-22-37 Drlg. 3,700 ft.
Great Western Prod. Co. No. 1-C State, C NE SW sec. 7-19-37. Drk.
Gulf Oil Corp. No. 1 Alley, C NE SE sec. 10-23-37. T.D. 3,713 ft.; P.B. 3,686 ft.; S.D.O.
Gulf Oil Corp. No. 8-F Bell, C NW NW sec. 36-20-36. Drlg. 2,745 ft.
Gulf Oil Corp. No. 1 Boyd, sec. 23-22-37. T.D. 3,681 ft.; tstg.
Gulf Oil Corp. No. 4 Day, C E½ SW NW sec. 6-22s-36. C.&P.
Gulf Oil Corp. No. 2-D Kutter, C SE SW sec. 8-19-37. T.D. 4,155 ft.; P.B. 4,100 ft.; S.D.O.
Gulf Oil Corp. No. 4-C Kutter, C SW NW sec. 18-19-37. T.D. 4,039 ft.; acid. and F. 2 B.O.P.H; acid. and F. into pits; no est.; 5% wtr.
Gulf Oil Corp. No. 2 Ramsey, C SW SW sec. 27-21-36. T.D 3,895 ft.; acid. and swb.; S.D.O.
Humble O. & R. Co. No. 5 Fopeano, C E½ SW SE sec. 26-20-36. T.D. 3,855 ft.; acid.
Humble O. & R. Co. No. 3-H State, C NW NW sec. 34-22-37. Drk.
Humble O. & R. Co. No. 3 Williams, C SW NW sec. 34-24-37. T.D. 3,532 ft.
Jal Nat. Gas Corp. No. 2 Justis, NE sec. 20-25-37. T.D. 3,029 ft.; tstg.
Carl B. King No. 1-A Stuart, NW NE NW sec. 14-25-37. T.D. 3,395 ft.; F. 116 B.O.P.D.; tstg.
Magnolia Pet. Co. No. 1 Brunson-Argo, C NW NE sec. 9-22-37. T.D. 3,554 ft.; fsg. tools.
Magnolia Pet. Co. No. 1 State G, NW NW NE sec. 34-17-34. T.D. 4,905 ft.; P.B. 4,794 ft.
Magnolia Pet. Co. No. 2 State-Bridges, sec. 14-17-34. T.D. 4,593 ft.; flwd. 51 B.O. in 1 hr. naturally.
Magnolia Pet. Co. No. 3 State-Bridges, C NE NW sec. 26-17-34. Drlg. 2,220 ft.
Magnolia Pet. Co. No. 6 State-Bridges, C SW NW sec. 23-17-34. T.D. 4,365 ft.; W.O.C.
Magnolia Pet. Co. No. 7 State-Bridges, C SW NE sec. 23-17-34. T.D. 812 ft.; cmtg.
Magnolia Pet. Co. No. 8 State-Bridges, C NW SE sec. 23-14-34. Drlg. 2,737 ft.
Maljamar O. & G. Co. No. 9 Baish, C NW NW sec. 21-17-32. Drlg. 2,365 ft.
Maljamar O. & G. Co. No. 4 Mitchell, C NE NE sec. 20-17-32. R.U.R.
Maljamar O. & G. Co. No. 5 Mitchell, C NW NW sec. 19-17-32. R.U.M.
Jas. A. Mascho No. 2 Cloyd, C SW SW sec. 20-22-33. Loc.
C. T. McLaughlin No. 1 Polhamus, NE sec. 9-24-37. T.D. 3,672 ft.; S.D.O.
National Drlg. & Prod. Co. No. 1 Flint, C NE NE sec. 29-20-34. Wildcat; drlg. 3,710 ft.
Ohio Oil Co. No. 1 Kutter D, C SW SW sec. 18-19-37. Drlg. 3,625 ft.
Ohio Oil Co. No. 1 State-Fleming, NE cor. sec. 2-26-37. Drlg. 970 ft.
Ohio Oil Co. No. 7 State-McDonald, C SW SE sec. 16-22-36. T.D. 3,871 ft.; C.O.
Ohio Oil Co. No. 2 State-Warn, C NE SW sec. 31-17-35. Drlg. 3,645 ft.
Parker Drlg. Co. No. 2 Irwin, C W½ NW SW sec. 35-24s-37. T.D. 140 ft.
Paton Bros. No. 2 Wilkinson, C SE SE sec. 8-18-31. Loc.
Lem Peters No. 1 L. J. May, C NW SE sec 27-22-37. Drlg. 2,850 ft.
Lem Peters No. 1 T. O. May, C NW NE sec. 34-22s-37. Drlg. 1,045 ft.
Phillips Pet. Co. No. 3 Santa Fe, C SW NW sec. 5-18-35. Rig.
Phillips Pet. Co. No. 4 Santa Fe, C SW SE sec. 31-17-35. Drlg. 1,530 ft.
Phillips Pet. Co. No. 5 Santa Fe, C NW SW sec. 31-17-35. T.D. 1,555 ft.; rng. csg.
Phillips Pet. Co. No. 6 Santa Fe, C SW SE sec. 21-17-35. T.D. 1,723 ft.; W.O.C.
Plains Prod. Co. No. 1 Humphreys, NE sec. 3-25-37. Loc.
Repollo Oil Co. No. 2 Hair, NW SW NW sec. 9-24-37. Drlg. 1,005 ft.
Repollo Oil Co. No. 1 State, SE cor. sec. 6-17-34. Drlg. 4,525 ft.
Repollo Oil Co. No. 2-B State, NE SE NW sec. 7-22-36. Drlg. 3,823 ft.; tstg.
Repollo Oil Co. No. 4-B Whitten, NE NE SE sec. 4-24-36. T.D. 3,594 ft.; S.G. 3,220-41 ft.
Rowan & Nichols No. 1 State, C NE NW sec. 22-10-37. Drk.
J. M. Rush No. 2 Wantz, C NW SW sec. 21-21-37. Cellar, pits.
Harry J. Schafer No. 1-A State, C E½ NW NE sec. 26-20-36. T.D. 3,865 ft.; swb. some oil; P.B. 3,845 ft.; W.O.C.
Shasta Oil Co. No. 2 Woolworth, NE NW NW sec. 28-24-37. T.D. 3,048 ft.; fsg.; gas.
Shell Pet. Corp. No. 4-E State, C SW NW sec. 12-20-36. Drlg. 3,800 ft.
Skelly Oil Co. No. 5 J. B. Baker, C SE NW sec. 27-22-37. T.D. 3,620 ft.; tstg.
Skelly Oil Co. No. 3 G. W. Sims, C NW NE sec. 9-23-37. T.D. 3,642 ft.; C.O.
Skelly Oil Co. No. 1-C R. R. Sims, sec. 3-23-37. Drlg. 3,688 ft.
Skelly Oil Co. No. 1-E W. P. Sims, C NW NE sec. 10-23-37. T.D. 3,625 ft.; flwd. 452 bbls. in 24 hrs.
Skelly Oil Co. No. 1-L State, C SW NW sec. 2-25-37. T.D. 1,289 ft.; W.O.C.
Southern Pet. Expl. Co. No. 2 Downes, C SW SW sec. 32-21-27. T.D. 3,772 ft.; treated and tstg.
Stanolind O. & G. Co. No. 2-A Hill, C SE NE sec. 6-21-37. T.D. 3,520 ft.; R.U.S.T.
Stanolind O. & G. Co. No. 5-B Myers, C NE SW sec. 9-24-37. Drlg. 2,450 ft.
W. H. Street No. 4 Woods, C NE NE sec. 22-22-37. T.D. 3,388 ft.; drlg. plug.
W. H. Street No. 2 Farrell, C NW SE sec. 22-22s-37. Drlg. 650 ft.
Texas Co. No. 3 Black, C NW NE sec. 21-24-37. T.D. 1,386 ft.; W.O.C.
Texas Co. No. 2 Cagle, SE NE NE sec. 9-26s-37. Loc.
Texas Co. No. 1 Corbin, C NW SW sec. 19-18-33. T.D. 5,118 ft.; P.B. 5,112 ft.; W.O. new tools.
Texas Co. No. 4 Fristoe, NW NE SE sec. 3-25-37. Drlg. 2,840 ft.
Texas Co. No. 1-N State, C SW SW sec. 30-17-35. Milling tbg. 4,690 ft.
Texas Co. No. 2-O State, C SE NE sec. 36-17-34. Drlg. 4,294 ft.
Texas Co. No. 3-O State, C SW NE sec. 36-17-34. Drlg. 1,600 ft.
Texas Co. No. 1-P State, C NW SE sec. 7-18-35. Drlg. 3,500 ft., new hole.
Texas Co., No. 1-Q State, C SE SE sec. 25-17-34. Loc.
Texas Co. No. 2-Q State, C SW SE sec. 25-17-34. Loc.
Texas Pacific C. & O. Co. No. 12-A State, C NE SE sec. 7-22-36. Drlg. 2,890 ft.
Twin Drlg. Co. No. 1 Corrigan, C SW NE sec. 4-22-37. Loc.
Twin Drlg. Co. No. 1 State, C SE NW sec. 32-21-37. Drk.
Weier Drlg. Co. et al No. 1 Woolworth, NE NE SW sec. 28-24-47. T.D. 1,530 ft.; W.O.C.
Ted Weiner No. 1 Smith, NE cor. sec. 4-25-37. T.D. 2,885 ft.; fsg.; S.O.&G.
Weiner No. 1 Parcell, C SW NE sec. 8-23-28. T.D. 1,372 ft.; W.O.C.
Western Gas Co. No. 1 Curry, C SE SE sec. 1-24-36. T.D. 3,600 ft.; tstd. 8,000 ft. dry sweet gas.
Western Gas Co. No. 1 Matkins, C SE SE sec. 15-23-36. T.D. 3,665 ft.; P.B. 3,658 ft.; tested 32,000 ft. of gas; S.I.O.

Eddy County

F. E. Baker No. 1 Eddy, NE sec. 12-22-37. T.D. 2,024 ft.; S.D.R.
Barnett Oil Dev. Co. No. 1 King Permit, C NW SE sec. 23-26-30. T.D. 980 ft.; S.D.

Danciger O. & R. Co. No. 4-A Turner, C SW SW sec. 18-17-31. Drlg. 3,380 ft.
Danciger O. & R. Co. No. 1-B Turner, CEL NE SE sec. 17-17-31. Loc.
D. & B. Oil Co. No. 3 Jenkins, NE NE NW sec. 20-17-30. Drlg. 2,550 ft.
Etz Bros. No. 5 State, SE NE SE sec. 16-17-30. Loc.
Finley & Cherry No. 1 Buchley, C NW NW sec. 28-16-31. Wildcat; T.D. 3,750 ft.; S.D.
Flint Prod. Co. No. 1-B State, SE sec. 20-17-30. Drlg. 3,830 ft.
C. J. Frederick No. 1 Reed, C NE SW sec. 28-24-28. Drlg. 2,684 ft.
F. W. & Y. Oil Co. No. 8-A Gissler, NE NW NE sec. 23-17-30. T.D. 3,237 ft.; drlg. by lost tools.
F. W. & Y. Co. No. 9-A Gissler, C SE NE sec. 14-17-30. T.D. 3,500 ft.; acidized and flowed 30 B.O.P.D.; shot and swb.; est. 10 B.O.P.D.
F. W. & Y. Oil Co. No. 3 Jackson, C NW SE sec. 13-17-30. T.D. 2,953 ft; fsg.
Grayburg Oil Co. No. 4 Keely, SE SW NE sec. 24-17-9. T.D. 3,588 ft.; to test.
H. A. Hartwell No. 1 Vandagrift, NE NE SE sec. 8-18-27. T.D. 2,000 ft.; S.D.O.
R. L. Holcomb No. 1 State, NW sec. 22-17-28. T.D. 1,980 ft.; S.D.O.
C. F. Ingram No. 1 Page, NE NE SW sec. 15-21-28. T.D. 1,495 ft.; R.U. mch.
B. M. Koehane et al No. 1 Shannon, SE cor. sec. 27-16-31. Drlg. 4,260 ft.; S.S.O.
Paul Moran No. 1 Crawford & Smith, NW NW SW sec. 24-24-36. Drlg. 1,740 ft.
Murchison & Closuit No. 1 Foster, SE NE SE sec. 17-17-31. Drlg. 3,461 ft.; S.O.&G.
Murchison & Closuit No. 2-A State, NW SE SW sec. 16-17-31. T.D. 3,585 ft.; acidized; S.O.&G.; tstg.
Paton Bros. No. 2 Ginsberg, C SE SE sec. 8-18-31. Drlg. 1,700 ft.
Premier Pet. Co. No. 1 Beeson, NE SE SE sec. 28-17-30. T.D. 3,250 ft.; flowed 77 B.O.P.D. through open 2-in.; tstg.
Red Gulch Oil Co. No. 2 Keyes, C SW SE sec. 4-17-28. T.D. 1,231 ft.; cmtg.
Repollo Oil Co. No. 3-A Keel, SW SE SW sec. 7-17-31. Drlg. 2,080 ft.
Repollo Oil Co. No. 2-C McIntyre, NE cor. sec. 20-17-30. T.D. 3,226 ft.; acidized; tstg.
Repollo Oil Co. No. 3-C McIntyre, NW SE NE sec. 20-17-30. Loc.
Repollo Oil Co. No. 3-A Parke, NW cor. sec. 22-17-30. Drlg. 2,130 ft.
Repollo Oil Co. No. 4-A Parke, NW SE NW sec. 22-17-30. R.U. mch.
W. K. Royalty Co. No. 2 State, C NW NE sec. 16-17-31. T.D. 3,661 ft.; S.O.&G.; tstg.
Paul Sarget No. 1 State, NE sec. 16-17-31. T.D. 3,749 ft.; P.B. 3,745 ft.; tstg.
W. O. Snyder No. 1 Pecos Irrigation, C NE SE sec. 15-25-28. T. D. 3,330 ft.; S.D.O.
Neil H. Wills et al No. 3-A State, NE SE SW sec. 20-20-30. T.D. 1,118 ft.; rng. csg.
Western Drlg. Co. No. 1-A Western, SE SW NW sec. 23-17-29. Drlg. 2,626 ft.; S.S.G. at 2,619 ft.

Chaves County

E. J. Fisher No. 1 Etz Permit, NE sec. 23-7s-26. T.D. 1,610 ft.; rng. csg.
Grastorf & Caudill No. 1 Smith, C NE NE sec. 1-4s-29. Wildcat; new hole; T.D. 1,580 ft.; reaming at 1,400 ft.
Interstate Minerals, Inc., No. 1 Dunigan, NW cor. sec. 15-15-30. C.&P.
J. & L. Drlg. Co. No. 2 Hurd, SW sec. 11-11-28. T.D. 1,000 ft. S.D.O.

De Baca County

Land Owners Oil Co. No. 1 McAdoo, SW cor. sec. 16-1s-7e. O.W.; prep. to deepen from 5,850 ft.; S.D.
James D. Ward No. 1 Summers, NW NE SW sec. 17-4n-20. T.D. 260 ft.; S.D.
N. F. Woods No. 1 Jones, C NE SW sec. 17-4n-20. T.D. 25 ft.; S.D.

Dona Ana County

Jules C. Bertrand No. 1 Casad Permit, sec. 24-26-5e. T.D. 47 ft.; S.D.O.

McKinley County

S. Dysart No. 1 Govt., NE sec. 14-14-10w. T.D. 1,390 ft.; fsg.

Otero County

Fred Turner, Jr., No. 1 Ella Everett, C SE SE sec. 34-22-13. Drlg. 3,030 ft.
Fred Turner, Jr., No. 1 H. V. Everett, SE SE sec. 28-22-13. Drlg. 1,700 ft.

Roosevelt County

C. S. Peterson and Conquistadores Oil Co. No. 1 Good, NW SE SE sec. 28-5s-30. T.D. 720 ft.; R.U.S.T.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc., No. 2 North Albuquerque, NE SE NW sec. 19-11n-4e. T.D. 3,750 ft.; M.I. 6⅝-in. and 3-in. D.P. to resume.

San Juan County

Continental Oil Co. No. 75 Rattlesnake, E quar. cor. sec. 2-29-19w. Drlg. 430 ft.
Al Greer No. 2 fee, SW SE SW sec. 10-30n-11w. Drlg. 475 ft.
Frank Lischke No. 1 Abreo, SW SW sec. 27-30n-11w. Drlg. below 520 ft.
Anna Oil Corp. No. 6 Govt., SW NE NE sec. 33-30n-11w. Drlg. 1,900 ft.

COLORADO

Archuleta County

Pagosa Oil & Dev. Co. No. 1 Macht, S sec. 32-36n-1w. Drlg. below 750 ft.

Cheyenne County

Gulf Oil Corp. No. 1 Union Pacific-Larsen, C SE NW sec. 13-13s-49w. T.D. 5,936 ft.; prep. to core for top Siliceous L.

Fremont County

Stanley Thomas No. 1 Rickwalt, SE SE sec. 2-19s-70w. Drlg. below 60 ft.

Garfield County

Roaring Fork Oil Co. No. 1 Patterson, C NE sec. 36-7s-88w. Recmtg. 8¼-in. at 721 ft.

Huerfano County

S. W. Pressey is moving in material for No. 1 Tomkins, NE cor. section 10-29s-69w, in the Oak View district, about one-third of a mile northeast of his No. 1 Ojo, which is bottomed at 3,550 feet where it is held up by a frozen string of 5⅞-inch casing.

S. W. Pressey No. 1 Tomkins, NE NE NE sec. 10-29s-69w. M.I.M.
S. W. Pressey No. 2 Alamo, C SW SE sec. 3-27s-68w. Rng. 8¼-in. at 1,200 ft.

Grand County

Interstate Oil & Ref. Co. No. 1 Hinman, NE SE NW sec. 11-2n-81w. T.D. 3,830 ft.; rng. 4¾-in.

LaPlata County

N. Spatter No. 1 Bryce, SE SW SW section 21-33n-9w, Bondad district, held up at 1,510 feet since last January with a fishing job, is skidding rig to start new hole.

N. Spatter No. 1-X Bryce, SE SW SW sec. 31-33n-9w. Skdg. rig from No. 1.

Mesa County

Continental Oil Co. et al No. 1 Miller, SW SW NW sec. 36-8s-91w. Drlg. 1,386 ft.; mostly sd.

Moffat County

Morapas Pet. Co. No. 1 Coles, SW SW SE sec. 1-3n-92w. T.D. 2,658 ft.; preparing to resume.

Park County

South Park Oil Co. No. 1 Lemar, NE NE SE sec. 34-11s-75w. T.D. 5,735 ft.; rdy. to res.

Prowers County

Continental Oil Co. No. 1 Ruby, C NE NW sec. 31-21s-44w. R.U.R. and drlg. W.W.

Pueblo County

C. E. Puckett No. 1 Barber, NW sec. 35-21s-66w. S.D. 280 ft.; repairs.

Rio Blanco County

Early announcement is expected of the plans of the Texas Co. and the California Co. for further exploration work on the Wilson Creek structure where the discovery well, their No. 1 Unit, SW SE NW section 35-3n-94w, was completed last February for 492 bbls. in 24 hours through the tubing from the Morrison sand at 6,664-6,725 feet. Estimates for another well have been made and are awaiting approval, but location has not yet been made. The discovery well drilled the Sundance and recovered saturated cores, but when cased and tested the sand yielded water. It is believed a slightly higher location will find production in that horizon, but very little is known regarding the subsurface structure and

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further exploration will be necessary to determine the facts. The second well may go to the Sundance if the drilling log in upper horizons shows that it is running higher than the discovery well.

The discovery well will be put on production at an early date to determine the gas-oil ratio, the pull on the sand and other information as a guide for further development. Hugh A. Stewart, manager of the producing department of the Texas Co. for the Rocky Mountain division, denied rumors that a pipe line will be built to Craig from the field this spring. He said plans are to move the oil to Craig by truck this year. It is expected that about 300 bbls. per day will be moved at first after which shipments will be governed by results in the production test.

Routt County

A test is to be drilled this spring on the Steamboat Springs (Deer Creek) structure 3 miles west of the town of Steamboat Springs by the Steamboat Springs Drilling Syndicate. J. E. Luttrell, of Craig, is head of the syndicate and others interested include Joe Pepper, of the Pipe & Mining Supply Co., of Denver, George V. Iles, of Denver, and others. E. S. Shaw, formerly with the Midwest Refining Co., geologized the structure and made the location, which probably will be on the A. R. Brown tract. The Niobrara is at the surface and the Dakota is expected at around 1,000 feet and the Sundance at 1,600 feet.

Craig & Moore No. 1 Erwin, C SW NE sec. 33-7n-85w. T.D. 650 ft.; strtng. cr. hole.

WYOMING

Albany County

The Murphy Oil Co. has resumed operations on the Quealy dome after the winter shutdown and released locations for two wells this week. No. 12 Holst is an outside location at the north end of the field, a north offset to No. 11 Holst, which was completed last December in the Dakota for 480 bbls. per day, estimated, on the basis of a short test. The other location is a south offset to No. 11 Holst.

The Quealy field is located on a 30,000-acre cattle ranch formerly owned by a subsidiary of Swift & Co. The ranch, with 1,700 head of cattle, ranch buildings, machinery and equipment was purchased recently by the Joe Miller Co., of Denver. The deal was subject to the oil leases held by the Murphy Oil Co.

Murphy Oil Co. No. 12 Holst, SE NW NE sec. 13-17n-77w. Bldg. rig (first report).
Murphy Oil Co. No. 13 Holst, SE SW NE sec. 13-17n-77w. Loc. (first report).

Big Horn County

Prescott & Mileski No. 1 Govt., NE NW SW sec. 15-1n-93w. Drlg. 536 ft.
Clifford S. Johnson No. 1 Johnson, CEL NW NW sec. 24-51n-93w. Rig; (cor); W.O. engine.
Joan Oil Co. No. 1 Howell, NE NW NE sec. 32-55n-97w. S.D. 3,385 ft.

Carbon County

The Cunningham Oil Co., Inc., has let contract to the Rocky Mountain Drilling Co. for a test to the Sundance on the Oil Springs dome in Carbon County, in its No. 1 Union Pacific-Cronberg. This formerly was released as a location for the Wyco Oil Co., Inc., and corrected location is given below. C D. Cunningham is president of the company. Associated with him are F. C. Kramer, of Denver, counsel for the Powerine Co.; Fred Mason, president of the Consumers Oil Co., of Greeley; Joe Pepper, of the Pipe & Mining Supply Co., of Denver, and H. W. Farr.

Cunningham Oil Co., Inc., No. 1 Union Pacific-Cronberg, SE NE SE sec. 3-23n-79w. Drk up; M.I.M.
Producers Oil Co. No. 1 Lake Valley, 200 ft. S of CNL sec. 14-20n-88w. Res. drlg. 1,755 ft.; 12½-in. at 1,588 ft.
Ohio Oil Co. No. 3 Hazlett Est., NE SW SE sec. 34-23n-79w. Drlg. 1,787 ft.; top Muddy 1,642 ft.
Ohio Oil Co.-California Co. No. 3 State-Griffin, C SW NW sec. 36-21n-79w. Drlg. 2,450 ft. (C.D.)

Converse County

New Era Fuel Co. No. 1 Boot Cattle, CSL SE SE sec. 1-31n-70w. S.D. 540 ft.; through White River.
E. B. Jones No. 1 O'Meara-Govt., NW SE NE sec. 17-32n-69w. Spdg.
Wyshawn Oil Co. No. 1 Lindley, NW SE SE sec. 34-32n-69w. Drlg. 900 ft.

Crook County

The Riverton Oil Co. No. 1, SE cor. section 19-49n-66w, in the Wakeman or Upton-Thornton district, was completed at 713 feet in a sand just above the Greenhorn limestone for 8 bbls. per day. This district was the scene of considerable drilling a number of years ago, but small producers only were found at shallow depths on the two domes. The oil is light green and especially rich in lubricating values. The company is moving machine to section 14-51n-67w for another shallow well.

Fremont County

Consolidated Oil Properties No. 3 Ewart, C SW SE sec. 16-1n-1w. Drlg. 820 ft.
Sinclair-Wyoming Oil Co. No. 2-B Muskrat, NW NW NE sec. 4-33-92w. Drlg. 4,960 ft.
Stanolind O. & G. Co. No. 1 Govt., C SE SE sec. 3-33n-96w. T.D. 8,920 ft.; cmtg. 7-in. liner in 9⅝-in. to perf. and complete as gas well in the Morrison.

Hot Springs County

California Exploration Co. No. 1 Govt., NE SE NE sec. 12-44n-97w. Drlg. 3,936 ft.

Natrona County

Wyoming scored an important discovery when the General Petroleum Corp. No. 1 Government, C NW SE section 21-35n-77w, a wildcat on the Cole Creek dome 14 miles northeast of Casper, found saturation in the Lakota sand of the Dakota series at 7,974-8,016 feet. It opens a light oil field almost at Casper's front door, in the immediate vicinity of the state's principal refinery, pipe line and railroad facilities, and calls attention to one of the largest synclinal basins in the west as a promising prospect for the wildcatter.

The well topped the Lakota at 7,974 feet on Sunday, May 8, and was drilled to 8,002 feet where it stopped for a drill stem test. With the tester seated at 7,976½ feet and open for 45 minutes it showed for 20 bbls. an hour. It was then deepened to 8,019 feet, 3 feet into the apple green Morrison shale, a marker which definitely identified the pay horizon. At this depth another drill stem test was made at which it showed for 30 bbls. an hour. The 7-inch will be set on top of the Lakota and the hole conditioned for a production test. Estimates as to what it will do range between 1,200 to 1,500 bbls. Preliminary analysis at the White Eagle refinery showed a gravity of 31.5 degrees on the A.P.I. scale. No distillation tests have yet been made, but the crude is expected to run high in gasoline and naphtha content.

The field is 9 miles northwest of the Big Muddy field, 30 miles south and a little east of Salt Creek, 13 miles east of the Midway dome and 14 miles northeast of Casper. The Stanolind Pipe Line Co.'s trunk line from Wyoming to Missouri runs within 7 miles of the field. The General Petroleum Corp. is the western exploratory and producing unit of the Socony-Vacuum Oil Co. The White Eagle division of the same company has a refinery just east of Casper and only 10 miles from the discovery. This plant has a charging capacity of 5,000 bbls. per day and a cracking capacity of 2,500 bbls.

Cole Creek is located on the anticline running in a

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southeasterly direction through Salt Creek and Teapot dome toward the Big Muddy field. General Petroleum has a solid unitized block of 15,000 acres except for 320 acres in the NW of section 28 and the NE of section 29, offsetting the discovery, which is held by the Stanolind Oil & Gas Co. Seven miles to the west, between Cole Creek and the Texas and the White Eagle refineries, H. Leslie Parker, and associates, of Denver, control the North Geary dome, an untested structure with 600 feet of closure.

One of the important features of the discovery is that it lies on the southwestern rim of the Powder River Basin, an area 125 miles long and more than 90 miles wide, which is one of the largest unexplored synclinal basins in the west. Heretofore sands in this basin, if present, were considered too deep for the drill. The Cole Creek well indicates the presence of the sands in the basin and gives promise of opening production on favorable highs. Around this basin are Salt Creek, Teapot dome, Cole Creek, Big Muddy, Lance Creek, Osage and other producing fields in the shape of a horse shoe. During the past three years extensive geophysical work has been done in the basin and the Phillips Petroleum Co., the Carter Oil Co., the Ohio Oil Co., Pure Oil Co. and other majors have taken up large blocks. No tests have been drilled to conclusive depths in the basin.

Stanolind O. & G. Co. No. 26 T.P.-Wyo Asso., C SE SW sec. 26-40n-79w. C.&P.
Western Producers, Inc., No. 1 Govt., NW SW SE sec. 5-39n-78w. Drlg. 1,156 ft.
Stanolind O. & G. Co. No. 8 T.P.-Midwest Oil, C NW SW sec. 35-40n-79w. Loc.; W.O. compl. No. 26.
Stanolind O. & G. Co. No. 26 T.P.-Wyo. Asso., C SE NW sec. 35-40n-79w. Crd. sat. in Tensleep at 3,903-22 ft.; prep. to complete.
General Pet. Corp. No. 1 Govt., C NW SE sec. 21-35n-77w. T.D. 8,019 ft.; rng. 7-in.

Niobrara County

Continental Oil Co. No. 12 Tom Bell, C SE SE sec. 33-36n-65w. Drlg. 3,562 ft.
A. B. Cobb et al No. 3 Novick-Ong, SW SE SW sec. 6-35n-65w. Drlg. 5,148 ft.
MacKinnie Oil & Drlg. Co. No. 3 Thompson, NW NE NW sec. 7-35n-65w. Drlg. on iron at 5,212 ft.
Minnelusa Oil Co. No. 2 H. & M., NW NE NE sec. 8-35n-65w. S.D.O. 325 ft. after cmtg. 13⅜-in.
Continental Oil Co. No. 11 Tom Bell Cattle, SE SW SW sec. 27-36n-65w. T.D. 5,415 ft. in sat. sd. and L.; prep. to run 7-in.
Hewitt Bros. and Manning No. 1 Pecklow, SE SE SE sec. 1-35n-66w. Drlg. 4,809 ft. in r.b.
Ohio Oil Co. No. 10 Putnam, NW SE NW sec. 4-35n-65w. T.D. 5,473 ft.; cmtd. 7-in. 5,396 ft.; W.O.C.; sat. in Leo sd. 5,045-73 ft.; increase in Dolomite at 5,455 ft.
H. D. Moore et al No. 1 Beregren, NW sec. 23-35n-63w. Drlg. in Sundance 937 ft.; top Morrison 587 ft.

Sublet County

Yellowstone Oil Co. No. 1 Henry Budd, C SE SE sec. 6-30n-112w. Drlg. 100 ft.; not Major O. D. Co.).
Wyoming Pet. Corp. No. 1 Chas. Budd, C NE NE sec. 10-29n-113w. Spdg.; (deep test to 5,000 ft.).

Sweetwater County

Sinclair-Wyoming Co. No. 78, SW SW NW sec. 11-26n-90w. Drlg. r.b. 3,574 ft.
Selegna Oil Co. No. 1 Union Pacific, SW SW sec. 11-20n-104w. Drlg. below 4,200 ft.

Washakie County

Wyoming O. & R. Co. No. 10-B Brome, C SE NE sec. 6-47n-90w. Drlg. 211 ft.

Weston County

Two wells were completed at Osage. H. D. Wiltse No. 11, CWL NE NW section 17-46n-63w, plugged back from dry sand at 452 feet and was completed in shale for 12 bbls. per day. Bradley-Manewel Oil Co. No. 7, CWL NE NE section 20-46n-63w, was dry at 840 ft.

Osage Trust Co. No. 30, NE NW SW sec. 14-46n-64w. Rng. 8¼-in. through the Greenhorn.
Chas. Stough No. 11, CSL SW NW sec. 4-46n-63w. Drlg. below 140 ft.
John Brorphy No. 1 George, SW SE NW sec. 26-48n-64w. T.D. 2,040 ft.; prep. to recmt. 6⅝-in.

MONTANA

Carbon County

R. C. Tarrant No. 1, 500 ft. W of C sec. 3-6s-18e. Drlg. 1,825 ft.
R. C. Tarrant No. 2 Heare, NW SE NW sec. 14-6s-19e. S.D. 1,780 ft.; chg. to rot.
Sha-Wa Pet Co. No. 1 Govt., SW SW NE sec. 35-9s-23e. Drld. cmt. plug to 3,055 ft. and hole began filling with W.; pulling 8⅝-in.
Miracle Oil Co. No. 2 Govt., CWL NE SE sec. 3-6s-23e. S.D. 2,381 ft.

Fergus County

Baughman & Singley No. 1 Skaggs, C NW SW sec. 7-15n-20e. S.D. 525 ft.

Glacier County

One well was completed in Cut Bank in the Santa Rita Oil & Gas Co. No. 1 Jordan, NW NW NE section 18-32n-5w, in the southern part of the field. It was completed at 2,772 feet in sand, and swabbed 210 bbls. first 15 hours. It is moving on spudder to swab and run rods and tubing. It had the Sunburst at 2,685-2,725 feet with a good show of oil at 2,710-15 feet. Top of the Cut Bank was at 2,725 feet, elevation 3,553 feet.

There were no new locations. Drilling in the field is being held to a minimum. The Glacier Production Co.

(Continued on Page 164)

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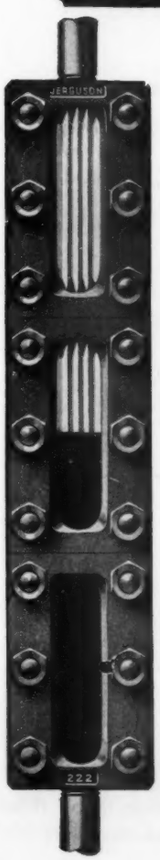

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Kansas Developments

By
DAL DALRYMPLE

Finney Wildcat May Extend Kansas Production Westward

Interest in Kansas field activity veered sharply to the west at the week-end, with the report that a Finney County wildcat was showing oil and gave promise of opening the state's farthest west oil producing sector.

It is the Atlantic Refining Co. No. 1 Nunn, C SE NE section 27-21-34w, 17 miles northwest of Garden City and 9 miles southwest of the Shallow Water pool in southern Scott County. The Shallow Water pool now is the farthest west producing area in Kansas, but if the Atlantic completes the Finney County wildcat as an oil well it will push production about 6 miles nearer the Colorado line.

Full recovery was obtained in a core at 4,654-64 feet, total depth. The first 8 inches of the core was in white lime, with some oil showing; the next 5 feet was saturated sand, and nothing was showing in the last 4 feet of the core. There was some free oil in the core barrel. Previously, spotted saturation had been cored at 4,628-38 feet. Operators were to run Schlumberger survey and may set casing for completion. It is thought the pay zone is in the Chester series of Mississippian formation, productive in the Shallow Water pool to the northeast.

This will be first oil pool in Finney County, if the wildcat is completed as a producer. Gas has been produced in the southwestern corner of the county for some time, in an area thought to be an extension of the Hugoton gas field.

The new Ellis County pool opener, Colonial Oil Co., Duwe & Farris No. 1 Hadley, SE NE SE section 12-11-18w, made potential of 1,266 bbls. of oil on state test the past week, producing from Arbuckle lime. Location is 1¾ miles southeast of the Burnett pool.

Producing limits of the Zenith pool, Stafford County, were extended one-half mile north at Stanolind Oil & Gas Co. No. 1 Hayes, SW SW SE section 11-24-11w. It made potential of 1,150 bbls. of oil at total depth of 3,790 feet. Pure Oil Co. No. 2 Krey, NW NW SE section 14-24-11w, became the biggest producer in the pool the past week when it flowed 939 bbls. of oil the first four hours and gained potential rating of 5,285 bbls. from Misener sand. It was bottomed at 3,823 feet. It is north offset to the company's No. 1 Krey, recently completed for 4,111 bbls. of oil daily.

Wildcat Operations

Five wildcats were abandoned as failures and one wildcat location was reported abandoned.

Stanolind Oil & Gas Co. No. 1 Depew, NW NW SE section 13-25-12w, south of the town of Stafford in Stafford County, found Arbuckle lime at 4,185 feet, and was dry and abandoned at 4,208 feet.

Kessler Oil & Gas Co. No. 1 Bowman, SW SW NE section 22-20-16w, southwest of the Pawnee Rock area in Pawnee County, had a sulfur odor in cores and was dry and abandoned at 3,825 feet, total depth. Anhydrite was topped at 1,070 feet, Topeka lime 3,105 feet, Kansas City lime 3,480 feet and Arbuckle lime at 3,774 feet.

Murfin and others No. 1 Rexroot, NW NW SE section 14-17-13w, wildcat south of the South Ainsworth area in Barton County, had Anhydrite at 745 feet, Kansas City lime 3,095 feet, showing of oil at 3,144-50 feet, water at 3,160-65 feet, Arbuckle lime 3,346 feet, and was abandoned with a hole full of water from 3,361-66 feet, total depth.

Earl Wakefield No. 1-A White, NW NW NE section 4-33-4, wildcat south of Winfield in Cowley County, had a hole full of water in Arbuckle lime at 3,469-3,505 feet, total depth, and was abandoned.

Prunty Production Co. and others No. 1 Tipton, NW NW NE section 31-25-14, Woodson County wildcat, had Mississippi lime at 1,502-1,775 feet, and was abandoned in Arbuckle lime at 1,857-1,955 feet, total depth, with water in the hole.

Hays & Sackrider No. 1 Dreher, NE cor. section 35-12-16w, was reported as an abandoned location.

First reports of the following wildcats were recorded: Coronado Oil Co., S. L. Wagaman and J. J. Vanier No. 1 Parks, SE cor. section 16-10-8, east of Manhattan in Riley County, was a location.

Fred G. Chambers of Denver, Colo., announced he has taken over the interest of C. W. Davidson and others in No. 1 Elliff, SE NE NE section 35-5-18w, Phillips County, recently reported abandoned at 600 feet, and will resume operations in the near future.

Phil-Han Oil Co. No. 1 Evans, NW NW SE section 21-23-15, was location for a wildcat in northern Woodson County.

Barner & Leiker and others were drilling below 200 feet at No. 1 Knapp, SE SW NW section 27-22-14, northwest of the Van Noy pool in southwestern Coffey County.

Estimated Daily Production

Estimated daily production for Kansas for the week ending May 14 and for the preceding week was as follows:

	Barrels	
	May 14	May 7
Oxford City	1,250	1,275
Burrton	11,725	11,700
Ritz-Canton	9,550	5,000
Graber	1,775	2,650
Hollow-Nikkel	3,200	2,750
Lerado	950	1,750
Voshell	2,375	2,350
Wellington	2,650	2,750
Ellsworth County:		
Lorraine	3,375	1,475
Other pools	1,365	1,200
Rice-Barton counties:		
Bloomer	3,425	1,925
Chase	5,850	4,000
Geneseo	2,800	2,275
Raymond	975	925
Silica	14,450	10,850
Silica-South	3,075	1,625
Keesling	1,075	750
Wherry	4,700	2,775
Miscellaneous Rice	4,215	3,005
Miscellaneous Barton	6,165	5,630
Russell County:		
Fairport	1,670	2,295
Gorham	1,600	1,905
Russell	1,475	1,430
Sullivan	7,365	5,635
Trapp	10,730	10,005
Miscellaneous Russell	7,585	9,680
Sedgwick County:		
Valley Center	1,015	1,020
Miscellaneous	2,685	2,830
Ellis County:		
Bemis	7,200	6,525
Miscellaneous	3,810	4,515
Kingman County	490	490
Stafford County	3,090	2,725
Greenwood County	9,500	9,650
Butler County	15,250	14,750
Other fields	16,040	22,785
Total Kansas	174,450	162,900

Stafford County

Stanolind Oil & Gas Co. and others No. 2 Hartnett, SW SW SE section 23-24-11w, Zenith pool, Stafford County, found Misener sand at 3,801 feet, was bottomed at 3,809 feet, flowed 167 bbls. of oil the first four hours and made potential of 1,005 bbls.

Atlantic Refining Co. and Phillips Petroleum Co. No. 1 Allander, C W half W half NW section 26-24-13w, St. John area, had Arbuckle lime at 4,114 feet, total depth 4,119 feet, swabbed 55 bbls. of oil in two hours, and made potential of 747 bbls. of oil, with 9 per cent water.

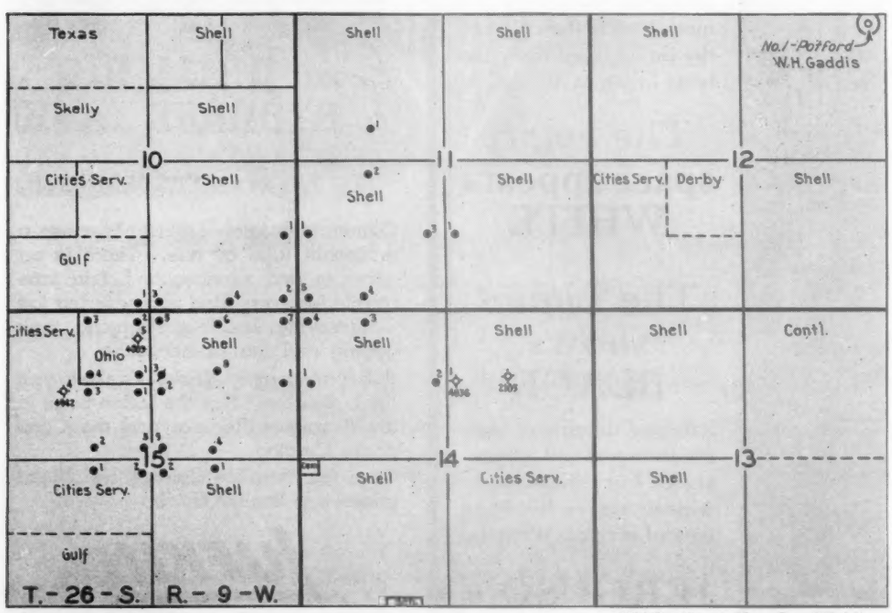
Stanolind Oil & Gas Co. and others No. 1 Unstead, SW cor. section 28-21-12w, Sittner district, was acidized and made potential of 205 bbls. of oil. It found Arbuckle lime at 3,599 feet, was bottomed at 3,622 feet and plugged back to 3,620 feet to complete.

New work in Stafford County: Magnolia Petroleum Co. No. 1 Gates, NW cor. section 35-21-13w, Gates area, moving in material; Stanolind Oil & Gas Co. No. 1 Fuller, SE SE SW section 11-24-11w, Zenith pool, rotary rig; same company's No. 2 Martin, NE NE NW section 14-24-11w, rigging up rotary.

McPherson County

Continental Oil Co. and others No. 7 Goering, NW NE SE section 29-21-1w, Graber pool, McPherson County, topped Hunton lime at 3,251 feet, total depth 3,305 feet, was acidized and made potential of 526 bbls. of oil.

Same operators' No. 5 Graber, C W half W half SE section 29-21-1w, was acidized with 6,000 gallons and made potential of 213 bbls. of oil, with 30 bbls. of water,



Mid-Continent Map Co., Wichita

Work has started at a wildcat in section 12-26-9w, northeast of the Lerado pool, Reno County, Kansas

and was completed at 3,330 feet, total depth. Top of Hunton lime was 3,292 feet.

Jess Cling and others No. 1 Unruh, C NW SW section 25-19-2w, Ritz-Canton area, had Chat at 2,910 feet, total depth 2,953 feet, and made potential of 68 bbls. of oil.

Continental Oil Co. and others No. 8 Huxman, SW SE NW section 29-21-1w, and No. 8 Goering, C E half E half SW section 29-21-1w, were locations in the Graber pool.

Russell County

National Refining Co. No. 5 Reinhardt D, SE SE NE section 19-14-14w, Russell County, topped Kansas City lime at 3,026 feet, total depth 3,182 feet, was acidized and made potential of 930 bbls. of oil, with 27 bbls. of water.

Coralena Oil Co. No. 1 Phinney, SE SE NE section 30-14-13w, topped Kansas City lime at 2,876 feet, had pay at 2,904 feet, was bottomed at 2,962 feet, acidized and made potential of 884 bbls. of oil.

W. I. Southern, Inc., No. 1 Meharg, NE cor. section 18-15-13w, an old well in the Coralena area, was deepened from 2,990 feet to Arbuckle lime at 3,225 feet, new total depth 3,229 feet, acidized, pumped 319 bbls. of oil the first four hours, 314 bbls. the next four hours and made potential of 1,885 bbls. of oil, with 7 per cent water, recompleted.

Sinclair Prairie Oil Co. No. 5 Hefferman, SE NW NE section 26-15-13w, an old well in the Sellens district, was deepened from 3,025 feet to Arbuckle lime at 3,250 feet, total depth 3,253 feet, and made potential of 1,035 bbls. of oil, recompleted.

New work in Russell County: Phillips Petroleum Co. and Indian Territory Illuminating Oil Co. No. 3 Wineteer, SW NW SE section 19-13-14w, Atherton pool, location; Central Petroleum Co. No. 2 Boxberger, NW SE SE section 26-14-14w, Gurney South pool, drilling below 385 feet; Stanolind Oil & Gas Co. No. 18 Mermis B, SW NW NE section 5-14-15w, location, and A. M. Austin and others No. 1 Resner, SW SE NW section 23-15-14w, Ochs pool, location on a Cities Service Oil Co. farmout.

Reno County

Ballard & Wallace No. 1 Welch, NE NE NW section 9-24-4w, Burrton field, Reno County, found Chat at 3,298 feet, had pay at 3,370-78 feet, total depth, was acidized, pumped 15 bbls. of oil daily, with much water, and was completed as a minimum well.

Ellis County

Magnolia Petroleum Co. No. 12 Johansen, SE SE NE section 22-11-17w, Bemis field, Ellis County, had Arbuckle lime at 3,401 feet, total depth 3,405 feet, and made potential of 2,472 bbls. of oil.

Margay Oil Co. No. 3 Bemis E, SE NW NW section 28-11-17w, made potential of 1,915 bbls. of oil from Arbuckle lime topped at 3,458 feet, total depth 3,466 feet.

Gulf Oil Corp. No. 3 Pearl, NW NE SE section 13-11-17w, Cress pool, found Arbuckle lime at 3,382½-88 feet, total depth, pumped 344 bbls. of oil the first four hours and made potential of 2,065 bbls.

Amerada Petroleum Corp. No. 1 Ruder, NE SE NE section 27-15-18w, had Arbuckle lime at 3,578 feet, total depth 3,633 feet, plugged back to 3,410 feet, it was shot, water intruded and the well was abandoned.

Magnolia Petroleum Co. No. 14 Johansen, SW SE NE section 22-11-17w, Bemis field, was moving in material.

Barton County

Of four producers completed in Barton County, the largest was Lebow No. 3 Steckel, NW NW SW section 1-20-11w, Silica district. It found Arbuckle lime at 3,271 feet, total depth 3,277 feet, was acidized and made potential of 1,858 bbls. of oil.

Helmerich & Payne No. 4 Stettinger, SE SW NE section 1-16-14w, Trapp field, was acidized and made potential of 1,231 bbls. of oil from Arbuckle lime topped at 3,322 feet, total depth 3,341 feet. After acidizing with 3,000 gallons it pumped 77 bbls. of oil in two hours at 3,330 feet, was deepened to total depth, reacidized and made potential.

Indian Territory Illuminating Oil Co. No. 3 Hoffman, SW SE NE section 1-16-14w, had Arbuckle lime at 3,301 feet, total depth 3,311 feet and was acidized two times. It pumped 190 bbls. of oil the first four hours, 114 bbls. the next two hours and made potential of 684 bbls.

Cities Service Oil Co. No. 2 Bitter B, SW SW SE section 8-16-13w, South Trapp, found Arbuckle lime at 3,385 feet, total depth 3,395 feet, was acidized and made potential 592 bbls. of oil, cutting 1 per cent water.

Eason Oil Co. No. 2 Ainsworth, NW SE SE section 33-16-13w, Ainsworth pool, was building rig. Stanolind Oil & Gas Co. No. 1 Soeken, C SE NW section 5-20-11w, was rigging up rotary.

Rice County

Continental Oil Co. and others No. 3 Pickerill, SW NW SE section 13-18-8w, Geneseo field, Rice County, pumped 317 bbls. of oil the first four hours, the same amount the next four hours and made potential of 1,904 bbls. of oil. Production was from Arbuckle lime at 3,211-18 feet, total depth.

Two new operations in Rice County were reported. Sam Schneider and others No. 1 Fair, NE cor. section 28-21-9w, was a location. Phillips Petroleum Co. No. 1 Miller, C E half E half NE section 3-21-6w, being drilled as a salt water disposal well in the Welch area, set 3-inch casing at 583 feet and was waiting.

Butler County

Cities Service Oil Co. No. 23 Hamilton, NW SE NE section 14-26-4e, El Dorado field, Butler County, had Arbuckle lime at 2,406 feet, total depth 2,443 feet, was acidized and pumped 50 bbls. of oil daily.

Additional New Work

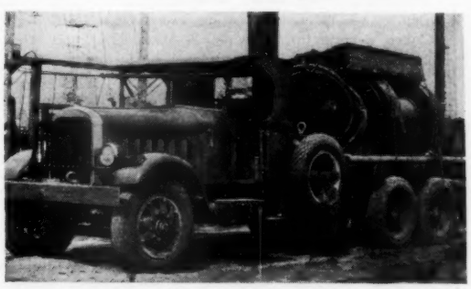
In Ness County, Continental Oil Co. No. 1 Everett A, SE SE NW section 8-18-25w, Aldrich area, was a location.

In Ellsworth County, Continental Oil Co. No. 1 Janssen, SE cor. section 29-17-10w, Stumps North pool, was a location.

In Sedgwick County, Prunty Production Co. No. 3 Smith A, SE NW SE section 16-25-1e, Goodrich pool, was shut down at 2,338 feet. George Fuller No. 1 Warren, NW NW NE section 21-25-1e, was drilling below 860 feet.

In Woodson County, C. L. Sheedy and others No. 9 Akins, SE cor. section 19-25-14, Quincy pool, was rigging up machine. Sinclair Prairie Oil Co. No. 15 McClaskey A, NE SE SE section 30-23-14, was a machine.

International Petroleum Exposition, Tulsa, May 14-21, 1938.



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Central West Fields

(Continued from Page 124)

1 J. W. Beal, section 20, found the Berea sand dry at 1,045-1,120 feet. In Washington Township, George Kernodle No. 1 A. L. Tedrick, section 14, is good for 946,000 feet of gas in the Berea sand at 1,382-86 feet.

In Licking County, Mary Ann Township, G. H. Long No. 3 D. A. Layman, Lot 11, fourth-quarter, made 8 bbls. of oil the first day after a shot from the Berea sand at 778-86 feet. In Mary Ann Township, Armbruster No. 1 W. H. Miller, Lot 1, fourth-quarter, is a gas well gauging 50,000 feet from the Berea sand at 737-42 feet.

In Medina County, Chatham Township, D. A. Eaken No. 17 Etta Root, Lot 21, Tract 16, was dry in the Berea sand at 345-57 feet.

In Meigs County, Salisbury Township, W. G. Reed No. 2 George Renshaw, section 32, gauged 335,000 feet of gas in the Maxon sand at 873 feet.

In Summit County, Green Township, East Ohio Gas Co. No. 1 Raymond Boettler, section 35, is good for 421,000 feet of gas from the Clinton sand at 4,319-40 feet.

In Washington County, Newport Township, Gales Oil Co. No. 7 C. B. Gale, section 27, made 5 bbls. of oil the first 24 hours after a shot from the Berea sand at 1,795-1,800 feet.

Lima Field

In Seneca County, Liberty Township, Homer Martin No. 6 on fee property in section 25, made 50,000 feet of gas from the Trenton formation at 1,422 feet.

In Wood County, Jackson Township, George W. Spohn and others No. 1 Abram Hawkins, section 21, was abandoned at 1,554 feet after a 100-quart shot failed to increase the oil and gas showing found in the Trenton rock at 1,547 feet.

WESTERN KENTUCKY

OWENSBORO, Ky., May 16.—A dozen new operations started quickly following the completion of Hoosier Drilling Co. No. 1 Blackwell, a 1,200-bbl. well in the Birk City district in eastern Henderson County, and two of the tests were close to completion when this was written. In Western Kentucky generally the week's completions included 20- to 50-bbl. wells in Daviess and Hancock counties. Four oil wells, one gas well and a dry hole comprised the week's total of results.

In Henderson County, Birk City district: Hoosier Drilling Co. No. 2 and No. 3 C. T. Blackwell, derrick up. Carter Oil Co. No. 1 O. L. Boswell, cored Jackson sand at 1,600 feet. W. E. Hupp and others No. 1 Mrs. Julia Gatewood, moved off rotary at 1,760 feet to drill McCloskey sand with cable tools. Thompson Drilling Co. No. 1 Mrs. Beulah Gilmore, derrick. Kentucky Natural Gas Co. No. 1 Otis Haynes, cemented 10-inch casing at 130 feet, drilling ahead. J. C. Ellis No. 1 K. A. Jones, drilling at 700 feet. Hoosier Drilling Co. No. 1 K. A. Jones, derrick up. Snowden & McSweeney and others No. 1 T. C. Jones, estimated 5,000,000 feet from Jackson sand at 1,525 feet, drowning out gas to drill deeper. Kentucky Natural Gas Co. No. 1 James C. McHatton, rigging up. Clark & Snyder and others No. 1 Tom Polk, derrick up; not started. Reed district: Petroleum Exploration Co. No. 1 Southern Trust Co., drilling at 300 feet. Corydon district: Sun Oil Co. and others No. 1 R. H. Trigg estate, moving in.

McLean County, Cleopatra district: Hoosier Drilling Co. No. 2 J. T. Hayden, rigging up.

Ohio County, Taffy district: Rex Pyramid Oil Co. No. 15 Scott Ambrose, spudding in. Sunnydale district: Lewis & Lang No. 5 J. B. Camron & Griffith, 5 bbls., Barlow sand 923-41 feet, shot with 90 quarts. Lewis & Lang and others No. 1 E. Farmer, drilling at 650 feet. Heflin district: J. C. Ellis and others No. 1 G. S. Holbrook, 100,000 feet of gas, Bethel sand 1,409 feet, drilling at 1,421 feet, still in sand. Adaburg district: B. & B. Oil Co. No. 3 Ben Midkiff, spudding in. Friendship Church district: A. Teller and others No. 6 Coy Medcalf, drilling at 275 feet.

Breckinridge County, Falls of Rough district: A. V. Smith and others No. 9 Greene Brothers, drilling at 100 feet. Cloverport district: Flesher & Galey No. 1 J. W. White, deep test, drilling at 1,040 feet.

Daviess County, Utica district: Daugherty & Ellis No. 1 Berkley Heirs, 20 bbls., Jett sand; No. 3 John Mills, moving in. Haynes district: McDonough & Co. and others No. 3 Peter Cooper, 50 bbls., Jett sand 752½-64 feet, shot 20 quarts, plugging; moving 20 feet to drill new well due to casing not being set. No. 4 moving in. Cane Run School district: Chester Oil Co. No. 4 E. Ewing, moving in. W. E. Hupp and others No. 9 Robert Jones, spudding in. J. C. Ellis & Ashby No. 8 Noel Rhoades, drilling at 125 feet. Hewletts Store district: General Drilling Co. No. 1 Dena Ralph, rigging up. Maxwell district: Cumberland Petroleum Co. No. 1 Mrs. Mae T. May, dry hole through Stray sand, 998-1,028 feet.

Hancock County, Easton district: J. C. Ellis No. 15 Thelia Richards, 50 bbls., Jett sand.

EASTERN KENTUCKY

ASHLAND, Ky., May 16.—Ten oil wells, nine gas wells and one dry hole were reported as completions in the past week in Lee, Martin, Floyd, Magoffin, Johnson, Pike and Knott counties in Eastern Kentucky.

A. Burnett reported a dry hole in No. 1 Day Lumber & Coal Co. on Log Fork of Walkers Creek in Lee County.

South Penn Oil Co. completed No. 108 in the Big

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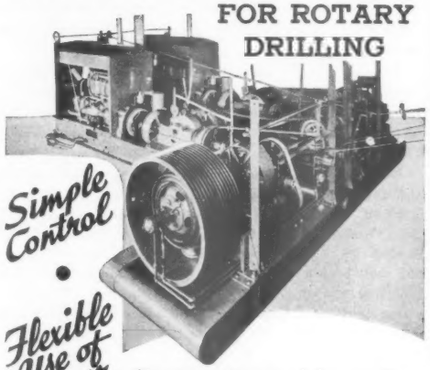

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Sinking district of Lee County, at 1,147 feet. It started at 25 bbls. daily. The well is on the Flahaven Land Co. land on Big Sinking. Thomas Wither completed No. 11 C. J. Tipton on Billie's Fork, a 5-bbl. well.

The Kentucky-West Virginia Gas Co. completed No. 5,238 M. W. Pratt, Martin County, with an estimated flow of 431,000 feet of gas.

Fred Williams completed No. 1 Mrs. Woods at Betsy Layne in Big lime at 1,510 feet, with a daily flow of 2,000,000 feet of gas.

Other operations by counties are as follows:

In Floyd County, Kentucky-West Virginia Gas Co. is down 143 feet in slate in No. 567 M. Slone and M. D. Slone, on Levisa Fork in Floyd County and at 2,550 feet in shale in No. 570 Clarence Neeley on Home Branch of Buffalo Creek. Same firm is testing gas at No. 569 Jeff Jervis, on Home Branch of Buffalo Creek, and is down 45 feet in No. 572 G. W. Taylor, also on Home Branch of Buffalo Creek.

Inland Gas Corp. is down 1,048 feet in Third Salt sand in No. 200 Layne Heirs, on Toms Creek. Hamilton Gas Co. has reached the 500-foot level in No. 77-D James Hatcher on Dropping Lick and is down 1,050 feet in No. 78-D on the same land.

Fred Williams completed No. 5 Stanley Heirs on Levisa Fork in shale at 2,790 feet. It started at 100,000 feet of gas per day. Fred Williams No. 3 W. Honaker, completed in shale at 2,720 feet, gauged 280,000 feet of gas daily.

Stephens and others are down 500 feet in No. 1 John Layne on Toms Creek, Levisa Fork. Spradlin and others have show of gas at 1,505 feet in No. 1 James Damron. Sturgill and others are down 1,200 feet in No. 1 Layne & Damron. Dorton and others completed No. 1 C. Cecil on Toms Creek, Levisa Fork, at a total depth of 1,517 feet. It started at 10 bbls. of oil per day. B. L. Sturgill completed No. 1 Morgan Layne on Toms Creek, a 50-bbl. well initially.

In Martin County, Meade & Stevens are down 600 feet in No. 1 Sam Webb in Martin County. Operator Diederich completed No. 4 Amy Pauley on Big Crooked Creek at 1,448 feet, in Maxon sand. It produced 50 bbls. the first day.

Warfield Gas Co. was drilling at 935 feet in salt sand in No. 4,772 Jeff Newberry and others on Blacklog Creek. The same firm completed No. 4,733 Jeff Newberry on Lick Branch at total depth of 2,699 feet in Brown shale with an initial production of 487,000 feet of gas.

Virginian Gas & Oil Co. completed No. 3-V-1,262 on its own land on Big Crooked, at a total depth of 1,451 feet, Maxon sand, initial production 20 bbls. of oil. The same firm was drilling at 168 feet in No. 4-V-1,263 on same land.

Kentucky-West Virginia Gas Co. was below 900 feet in sand, in No. 573 Jennie Caldwell on Peg Fork of Coldwater Fork. The same firm was down 240 feet, in slate, in No. 5,240 C. W. Preece, Coldwater Fork, and at 1,035 feet in sand, in No. 5,241, is grading location for No. 5,242 Preece and drilling below 230 feet in No. 17, same land.

Virginian Oil & Gas Co. was drilling at 100 feet in No. 2 J. W. Parks, on Big Crooked. J. T. Diederich was spudding No. 5 Amy Pauley, also on Big Crooked.

In Lee County, the Virginian Oil & Gas Co. is down 70 feet in No. 7-V-1,264 Lida Ann Moore and others on Bee Rock Branch of Little Sinking Creek. J. C. Ellis has shut down to repair machinery at No. 2 C. J. Tipton, Billie's Fork, Big Sinking district. Thomas Wittmer completed No. 11 C. J. Tipton, good for 5 bbls. initially. It is on Billie's Fork.

In Magoffin County, C. J. Sipple & Co. is down 990 feet in No. 7 William Sayler, in Birch Branch, Burning Fork district, with preparations being made to core sand.

Operator Jenkins completed No. 1 John Adams at 1,168 feet in Weir sand, the well making 6 bbls. a day without a shot.

In Johnson County, Francis & Webb completed No. 3 James Wells on Daniels Creek at 1,168 feet, with a flow of 143,000 feet of gas daily. E. J. Evans is down 800 feet in No. 4 Thealka Coal Co., at Road Fork.

In Pike County, Mountain Oil & Gas Co. is shut down in Big lime in No. 1 O. T. Alley, at Blackberry. Whittis & Smith completed No. 2 Sol Johnson at 3,256 feet, in shale, with daily flow of 210,000 feet of gas. The Inland Gas Corp. is down 490 feet in No. 199 Helen Leslie on Hammond Branch of Levisa Fork.

In Lawrence County, Rockcastle Gas Co. completed No. 2 J. W. Hall on Mill Creek as a gas well.

In Knott County, Inland Gas Corp. was drilling at 2,070 feet in slate and shells in No. 198 Maryland Beverly on Jones Fork of Right Beaver. Operator Spurlock completed No. 2 Charles Hicks on Jones Fork in Injun shale at a total depth of 2,810 feet. It produced 135,000 feet of gas.

East Texas Fields

(Continued from Page 132)

3,845 feet, 512 bbls. WE Production Co. No. 1 L. C. Denny, 3,819-3,940 feet, 720 bbls.

Young County

Chambers & Humphreys No. 2 S. M. J. Benson A. 922-30 feet, 25 bbls. Duncan Holt Marchman No. 25 S. M. J. Benson A, 885-900 feet, 100 bbls. W. G. Horn No. 3 W. B. Gregg, 763 feet, dry. Howard Petroleum Co. No. 1 G. P. Stewart, 5,601 feet, dry. Pemeta Oil Co. No. 7 E. P. Tatum, 655-68 feet, 5 bbls. Harry C. Trentman No. 1 R. C. Lindley, 3,825-3,980 feet, 15 bbls. Wootten & Wilson No. 1 A. C. Calsy A, 1,028 feet, dry. T. D. Humphrey No. 3 S. R. Jeffery, abandoned location.

Paul Atchley No. 3 S. M. J. Benson, 912-26 feet, 75 bbls. Black Gold Oil Corp. No. 1 J. H. Crearley, 4,067-4,138 feet, 425 bbls. S. D. Glover No. 3 H. W. Hennig, 1,312 feet, dry. Gorsuch Oil Co. No. 25 Mrs. O. W. Mathews, 760 feet, dry. T. D. Humphrey No. 2 G. W. Easterling, 3,796-3,948 feet, 424 bbls. Tom A. Jirk No. 1 A. W. Wilborn, 1,322 feet, dry. F. J. Lennon No. 1 B. K. Crossland, 680 feet, dry. Lupton & McLester No. 5 C. M. Gibson and others, 3,636-80 feet, 200 bbls. A. T. Strong No. 1 N. B. Carter, 4,448 feet, dry. E. B. Willis No. 1 Mrs. Etta Bloodworth, 1,040 feet, dry.

Wilbarger County

C. U. Beasley No. 1 W. T. Waggoner, 1,907-24 feet, 10 bbls. Phillips Petroleum Co. No. 1 W. T. Waggoner Barger, 3,757 feet, dry. Joe A. Worsham No. 1 W. T. Waggoner, 4,185 feet, dry.

King Oil Co. No. 8 W. T. Waggoner N, 1,529-39 feet, 16 bbls.; No. 1 W. T. Waggoner W, 2,896-2,905 feet, 175 bbls.; wildcat. H. S. Rose No. 1 Mary Womack, 1,526 feet, dry.

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Michigan Field Report

By
O. C. PRESSPRICH

Tuscola County Is Added to State's Producing Regions

SAGINAW, Mich., May 16.—Tuscola County, up in the "thumb" of lower Michigan's "mitten," splashed into the oil picture the past week to distract attention from steadily growing activity in half a dozen other Michigan fields.

Successful new producers in such fields as the rich Buckeye in Gladwin County, the growing Salem pool in Allegan County, the steadily producing Sherman, Porter and Greendale fields and the new but still questionable pool in Edenville Township of Midland County were pushed out of the spotlight by the first commercial oil production in Tuscola County.

The discovery, made at Norton & Kramer No. 1 George and Laura Sharp, NW NW NW section 30, North Akron Township (14-8e), tapped a flow of oil in the Monroe formation after passing through apparently valueless oil showings in Berea, Traverse and Dundee strata. The test is bottomed at 3,814 feet, 339 feet in the Monroe. Drilling was halted only a foot in the pay, and it has not yet been decided whether to acidize or deepen in an effort to increase the flow beyond the 100 bbls. it showed in the first 24 hours. The well flowed by heads at approximately four-hour periods. Had no oil been found in the Monroe, the operators planned to continue to the Sylvania formation.

The Norton-Kramer-Sharp wildcat is the first successful test in Tuscola County—in fact in the entire Thumb district, although many failures have been recorded in that prosperous farming area. The well confirms, in so far as one well of undetermined potentialities can do so, the predictions and optimism of a group of Huron and Sanilac County men who, a decade ago, held extensive acreage in northern Sanilac and southern Huron, extending to the eastern edge of Tuscola County. Their activity resulted in the sinking of some tests, none of which was completed, in Minden Township of Sanilac County and Sherman Township of Huron County. Pure Oil Co. probed the area in a series of formation test holes in 1931, especially in Sanilac County. Geologists reported at the time the expectation of striking the Petrolia, Ontario, vein of production to the southeast and the Saginaw field, then still active, to the west. The Tuscola discovery is also pointed out as being in the northwesterly-southeasterly trend of formations in relation to the Buckeye field of Gladwin County. Geologists probing formations in the Thumb district in a northwesterly direction from Port Huron reported several years ago favorable oil bearing strata lying higher than in the then active Saginaw field, its nearest neighbor with the exception of Petrolia. Berea sand and Traverse formations were declared at that time as probably the most favorable for production. In several sections of southern Huron and northern Sanilac surface outcroppings of oil were found, and creeks bore traces of oil, especially in the vicinity of the Cass River in eastern Tuscola County and the swamps of Minden Township of Sanilac County.

Midland County—Edenville Township

Another week passed with Edenville's boundary markers and formation trends as indefinite as the day Chapman's discovery focused attention on the area. So far the area remains in the spotlight as defying predictions based on geological knowledge or data brought up by bailers. Operators continue to find a note of optimism in the development, however, and look to the next 60 days for something approaching definite knowledge of trends in the field. Discriminate tests so far have apparently established north and south boundaries, with the whole of the northeast-southeast area still awaiting proofs. Drilling in Edenville has been characterized by uncertainty much more pronounced than in other Michigan fields. Based on the little so far learned from scattered producers and dry holes, operators have encountered dry holes where production was indicated and good producers where dry holes were forecast.

One test due to reach the expected production area momentarily in Edenville was outstanding last week as a possible boundary indication. It was Fortney Oil Co. No. 1 Corning Estate, NW NW NE section 26-16n-1w, a northeastern edge test, which would open additional territory for exploration if successful. The Fortney test is eight locations east and two north of Chapman's discovery.

Sun Oil Co. kept Edenville in the new production column with a 400-bbl. natural producer, its No. 2-B State-Edenville, NE SE NE section 27-16n-1w, three locations east of discovery. It is on the eastern edge of section 27, and offsets are well under way. The only other Edenville event of the week was completion of Pure Oil Co. No. 1-A State-Pure-Shell, NE NE SW section 27, which came in as a 300-bbl. natural producer and was acidized last week for no material increase. It is a diagonal offset of Chapman No. 2-A, southwest of discovery.

Midland County—Mills Township

McClanahan Oil Co. No. 1 Ault, NE SE NW section 11-16n-2e, was abandoned as a dry hole. This test is about 12 miles east of the Edenville field.

Gladwin County—Buckeye Township

Buckeye, top-notch production field in Michigan, failed to add any producers last week, though two were marked "final completion" after acidizing. One was Kales-Graves Co. No. 4-B Armstrong, SW SW SW section 23-16n-1w, completed at 600 bbls. daily, having raised its initial natural production somewhat by acid. The other was Turner Petroleum Co. No. 4 Schrantz, SW SW SW section 2-18n-1w, a northeast extension, which developed 75 bbls. after acid. One Buckeye test was being closely watched as a possible westward extension, due to hit production levels about May 18. It is F. O. Whitelow No. 1 Campbell, NE NW SE section 27-18n-1w. This wildcat is in unproved territory, a western outpost of the upper part of the south (Oard) pool.

Bentley Township

A small commercial producer and a dry hole was the extent of the week's completions in Gladwin County's fast growing Bentley pool. Durham & Jones No. 2 LaFurgey, NE SW NE section 20-17n-2e, which a week ago reported oil in the hole, was acid treated and developed into a 60-bbl. daily producer. Stork Oil Co. No. 1 Dufort, SE SE NE section 34-17n-2e, failed to hit the pay zone and was marked for abandonment.

Bourret Township

C. W. Teater No. 1 Olson, SE SE NE section 14-20n-2e, only active test in Bourret Township, was slated for abandonment after finding the Dundee dry. The test was in the extreme northeasterly part of Gladwin County.

Bay County—Kawkawlin Township

Acidized production of Gulf Refining Co. No. 1 Swantek, NW SE SE section 35-15n-4e, produced encouraging information on the Kawkawlin district of Bay County. The well was acidized and flowed about 100 bbls. the first day, some of which was believed to be the oil used in treatment. Later the test was placed on the pump, and was reported Friday to be a 25-bbl. daily pumper. The test is the second drilled by Gulf in the area. The first, in Monitor Township, about 1 mile southeast of the Kawkawlin test, was a small natural pumper, which has not been acidized. The Swantek wildcat gauged about 8 bbls. daily, natural flow. While the area has not been considered likely to show prolific production, the latest test may be interpreted as confirming the possibility of a pool in the sector.

Secord Township

Secord Township development appeared destined for further setback with the apparent failure to obtain a third producer for the field. Whitehill & Drury No. 1 Link, NE NE NE section 14-19n-1e, continued drilling deep in the Dundee limestone, with hopes waning for commercial production. Failures to the north, northeast and west of discovery have eliminated expansion in those directions. Secord is about 10 miles north and slightly east of Buckeye Township.

Allegan County

Allegan County, which led all production in Michigan fields for three weeks, struck a temporary lull in new producers, and added only a small commercial producer the past week in its growing Salem field. It was Royalease, Inc. No. 1 Berens, NW SW SE section 17-4n-13w, which rated as a 50-bbl. producer after acidizing. Monterey and Dorr townships, heavily played recently, had several tests ready to strike the pay zone in the Traverse within a week.

Ogemaw County—Foster Township

The only active test in Foster Township, Ogemaw County, Pure Oil Co. No. 1-A State-Ogemaw, N half NW NW section 36, was found dry this past week.

Isabella County—Wise Township

Reopening of Wise Township as a possible source of natural gas supply after a year's layoff may result since James A. Peirce No. 2 Murphy, C SW NE section 6-16n-3w, tapped a 1,500,000-foot gasser last week. The test bottomed at 1,308 feet, 6 feet in the "Michigan Stray" sand. Besides gas, the well logged about 8 bbls. of oil daily. The wildcat is about 100 yards west of No. 1 Murphy, sunk by the same company in March, 1937, which also gauged 1,500,000 feet. Socony-Vacuum Oil Co. is drilling in section 11, Wise Township, the first test in this section since 1931.

Widely Spread Operations

How Michigan's oil explorations are spreading to dot with derricks and gin-poles a continually widening area of the state's lower peninsula is capably illustrated by last week's list of drilling permits issued by the state conservation department, covering licenses for wells in no fewer than 10 counties—from Allegan and Ottawa on the Lake Michigan shore to Arenac on the shore of Lake Huron, from Macomb, near Detroit, to Gladwin, site of the state's richest field, the prolific Buckeye area.

Allegan County led the list with four permits, two each in Dorr and Salem townships. Isabella County's three permits were all for the established Sherman Township field. The other eight licenses were scattered through as many counties: AuGres Township of Arenac County; Billings Township of Gladwin County; Burnside Township of Lapeer County; Lenox Township of Macomb County; Jerome Township of Midland County; Winfield Township of Montcalm County; Holland Township of Ottawa County, and Lakefield Township of Saginaw County.

Production by Pool

Michigan's rich Buckeye field set a new top for production in April, while the Allegan County fields and the Clayton field in Arenac County also pushed

(Continued on Page 150)

Southwest Texas District

Prospective Balcones Fault Pool and Field Extensions

By
F. L. SINGLETON

CORPUS CHRISTI, Tex., May 16.—The testing of a prospective pool opener along the Balcones fault line district in Burleson County, and the showing in a wildcat in the Laredo district, held the attention of operators in the Southwest Texas district the past week.

Red Bank Oil Co. No. 1 H. H. Coffield is believed to have opened an Edwards lime field, south of Rockdale, Burleson County, as the well is flowing into pits, showing wash water and considerable 34.5-gravity oil. Soft Edwards lime was cored last week at 6,170-71 feet. The hole was treated with 500 gallons of acid which was held on the formation for about two hours. When the pressure was released the well started flowing acid water and oily emulsion at the rate of 20 to 25 bbls. per hour from 12:30 a.m. to 4 a.m. on May 13. At the end of this period the well started flowing by heads and at 7 a.m. it stopped making heads. Samples of the fluid were taken which showed 50 per cent water and about 30 per cent green sweet oil, and the balance was basic sediment. Late in the past week, the pressure on tubing rose from zero to 85 pounds and the well was flowing again through 2-inch tubing swung at 6,157 feet, and through two ⅜-inch holes in the drilling bit, which is on bottom. This is the third wildcat drilled in the area by this company.

The completion of Paul Texas No. 1 McKnight, a wildcat in Dimmitt County, has been retarded by mechanical trouble, although it has made its appearance as a large gas well. It was originally tested in the Edwards lime at a total depth of 7,141 feet, and was plugged back to 2,460 feet, and the casing shot with six quarts of nitroglycerin at 2,451-56 feet. While pulling drill stem, the well blew out making an estimated 8,000,000 feet of gas. It was brought under control and when tubing was run for a completion test, the casing was found parted approximately 900 feet from the top, and the operators are now fishing for the pipe. This has been one of the most interesting tests drilled along the Balcones fault line in years, and the showings logged in the Edwards lime will no doubt lead to further development along this anticline which has been traced northwesterly through Maverick County.

Two and one-half miles west of Mitchell Lake, Bexar County, Luling Oil & Gas Co. has apparently opened a small field in Austin Chalk with the completion of No. 1 Russell. The hole is bottomed at 1,180 feet and after it was treated with acid pumped 38 bbls. of fluid in eight hours, of which 60 per cent was water and the remainder 14-gravity oil. Location is in the Fernando Rodriquez Survey.

Laredo District

In Duval County, Laredo district, H. J. Porter and others No. 1 Fitzsimmons, about 9 miles northwest of San Diego, in the J. Poitevent Survey No. 291, is awaiting orders after recovering 450 feet of 45-gravity oil and 90 pounds of pressure on a 15-minute drill stem test. The Hockleyensis was topped at 3,400 feet and the first showing was logged at 4,280-4,305 feet, where a 10-minute drill stem test showed 375 pounds of working pressure, and 160 feet of fluid, 80 per cent of which was drilling mud and the balance distillate. The well is located on the same trend as the Benavides field, which has resulted in an extensive wildcatting campaign throughout this area. Casing will be run for a production test.

In the same county and 2 miles northwest of Freer, Magnolia Petroleum Co. has staked location for No. 1 Duval County Ranch Co., in section 291, Rowan & Hope No. 1 Cuellar, a recent wildcat location in the B.B.B&C Survey, section 96, is drilling ahead after cementing surface casing at 198 feet.

In Starr County, Henshaw & Davis No. 1 M. M. Garcia has attracted attention as it is showing some oil after perforating casing at 2,662-69 feet. The well is about 4 miles north of the Barbacoas field in the central part of the county, and the outcome of the well may open an important extension, or a new field.

Salvieja Oil Corp. No. 2 Garcia, in Willacy County, which has been shut down for several weeks at 8,695 feet, has been taken over by Continental Oil Co. The company will deepen the hole to 10,000 feet. Northeast of Mercedes, Magnolia Petroleum Co. No. 1 F. Armendiaz is drilling below 10,197 feet.

Eight Active Tests

In the Corpus Christi district, interest continued to be centered on the progress of eight active wells in the newly opened South Alice field, Jim Wells County. West of the discovery well, W. G. Coates No. 1 Lindsey and Reed, showed salt water in the 3,400-foot sand and is drilling for the Basal Frio (discovery horizon). Callaway and others No. 1 Cooke is making a preliminary test of the shallow sand before drilling ahead. Southeast of the discovery, Walter Goldston No. 1 Lindsay and Reed logged the shallow sand at 3,456 feet, but it tested salt water and the hole is being deepened. Cox & Hamon No. 1 W. R. Perkins, is drilling in shale below 4,300 feet and all details of the core record are being withheld by the operators. Reports that the discovery well, H. H. Howell No. 1 Lindsey and Reed, is making salt water is incorrect as a recent shake-out test at the separator showed no salt water content. While there are several unleased tracts in the area, the majority of the operators are watching the progress of the present drilling activity, before buying additional acreage. The potentiality of this field should be determined within the next two weeks.

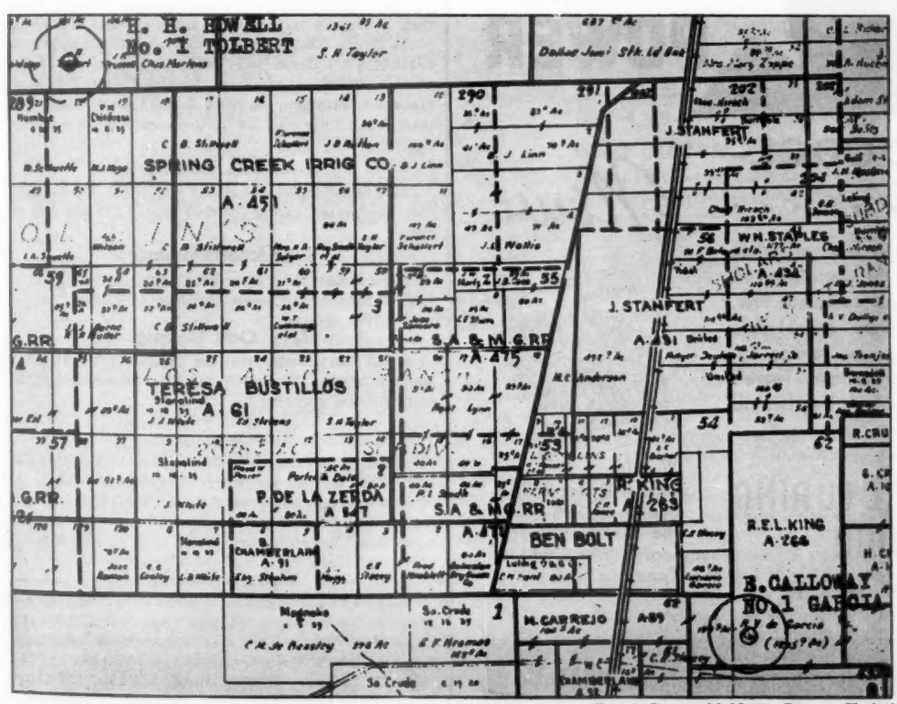
In the Alice Field

Approximately 3 miles southwest of the field, in the Ben Bolt area, little hope was given Richardson Petroleum Corp. No. 2 Garcia, which is coring below 6,000 feet and has failed to log any of the sand from which the first well attempted to blow out, located several hundred feet due south. Northeast of this test and on a geophysical structure, Humble Oil & Refining Co. is drilling below 1,500 feet. Regardless of the outcome of the present drilling campaign at South Alice, a very definite trend play has been set off extending northeast through San Patricio and Refugio counties and as far south as Starr County.

East of the Plymouth field about 2½ miles, Humble Oil & Refining Co. has completed No. 1 Smith and Tolbert as a gas well for the discovery well of the East Plymouth field. The rig has been moved over for a second test and gas from the discovery well will be used as fuel. The well was completed through perforated casing at 4,808-10 feet for an estimated 1,225,000 feet of gas daily through a 5/32-inch choke, with tubing pressure 1,700 pounds and casing pressure 1,500 pounds. No. 1 Smith and Tolbert showed several hundred feet of pipe line oil in the 4,800-foot zone, but the company was unable to rid the flow of salt water which broke in each time the well was tested.

East White Point Extended

The East White Point field, San Patricio County was extended 1,500 feet with the completion of Plymouth Oil Co. No. 1 T. B. Owens. Perforations were made in the casing at 5,663-67 feet and the well flowed 7 bbls. per hour through a 9/64-inch choke, with casing pressure 1,050 pounds and tubing pressure 800 pounds. A shallow gas sand was found by the same company No. 1 Cole, section 62, which showed 375 pounds of pressure



Porter Regenold Maps, Corpus Christi

Earl Calloway No. 1 Garcia, Jim Wells County wildcat, which is preparing for a production test. H. H. Howell No. 1 Tolbert, temporarily abandoned several weeks ago, is shown to the northwest

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on a four-minute drill stem test at 3,980-4,035 feet. It is coring ahead for the discovery horizon.

A deeper sand in the Saxet field, Nueces County, was believed to have been found on the north end of the field by Richardson Petroleum Co. No. 2 Erigan, Survey 311. Five-inch liner has been cemented on bottom at 7,999 feet, and the well is to be tested in this horizon. Details of the sand record are being withheld by the operators. No. 2 Erigan is an old well drilled deeper and if productive it will be the deepest producing well in the field.

In the Stratton field, Nueces County, John F. Camp Production Co. No. 5 C. Wardner has apparently opened another sand. A drill stem test at 5,263-68 feet showed 300 pounds of pressure. In the western part of the county Southern Minerals Corp. No. 7 King recovered five thribbles of oil and 40 pounds of working pressure on a 20-minute drill stem test at 3,990-4,015 feet. Location is in section 6 of the King Farm lots.

In the Telferner area, Victoria County, J. G. Mayo and J. C. Bunn were running casing in No. 1 A. B. Wagner to test a shallow sand that showed possibilities at 2,518-29 feet. The well is located on farmed-out acreage from the Magnolia Petroleum Co., and is south of No. 1 Willie Beck, a gas well completed at 3,575-85 feet.

COMPLETED WELLS

Completed wells in proven Southwest Texas fields with their total depth and initial 24-hour production of the producing wells were as follows:

Caldwell County

Branyon field: Coffield & Robinson No. 3 Young, 2,352 feet, 60 bbls. oil, 30 per cent water, pumping. Dunlap field: Housel Oil Corp. No. 2-B Dunlap, 2,316 feet, 25 bbls. oil, pumping. Luling field: Taylor Refining Co. No. 3 Brown, 2,159 feet, 30 bbls. pumping. Taylor Refining Co. No. 1 Stranklin, 2,192 feet, abandoned. Taylor Refining Co. No. 4 Clark, 2,331 feet, 150 bbls., flowing open, 2-inch tubing. Philtop Oil & Gas Co. No. 9 Dorn, 1,880 feet, 50,000 feet of gas.

Duval County

Benavides field: Frank Gravis No. 3-B Puig, sand 4,735-62 feet, 80 bbls. ⅛-inch choke. Cole field: Cole Petroleum Co. No. 102 Benavides, 1,786 feet, abandoned. Driscoll field: Continental Oil Co. No. 22-A Sevier, 3,371 feet, perforated casing 3,345-60 feet, 28 bbls. per day, ¼-inch choke. Hoffman field: Cox & Hamon No. 12 Cuellar Brothers, sand 2,818-31 feet, 90 bbls., jetting. R. A. Thompson No. 1 Robles, 2,796 feet, abandoned. Lundell field: Magnolia Petroleum Co. No. 18 Duval County Ranch Co. sand 1,482-85 feet, 50 bbls., pumping. Seven Sisters field: A. J. Brinkoeter No. 1-B Garza, 2,663 feet, 7 bbls. per hour ⅜-inch choke. Coffield & Lanning No. 2 Garza, 2,641 feet, 100 bbls. pumping. Lanning & Coffield No. 1 Garza, total depth 2,653 feet, initial production 100 bbls., pumping. Piedra De Lumbre field: Magnolia Petroleum Co. No. 1 Duval County Ranch Co., total depth 2,074 feet, iintial production 98 bbls. pumping.

Goliad County

Maetze field: Windward Oil Co. No. 1 Drieo, 3,813 feet, perforated casing 3,806-09 feet, 1,225,000 feet of gas.

Guadalupe County

Darst Creek field: Trio Oil Co. No. 1 Wilson, 2,630 feet, 30 bbls. oil, 12 hours, pumping.

Live Oak County

Ezzell field: Bleak Hill Oil Co. No. 1 Viteri, 1,577 feet, abandoned. Bleak Hill Oil Co. No. 6 Viteri, 1,586 feet, 46 bbls., pumping.

Refugio County

Refugio field: Houston Oil Co. No. 42 Rooke, 6,203 feet, 173 bbls., ⅛-inch choke. Tomoconnor field: L. A. Nordan No. 17-B O'Connor, 5,882 feet, 612 bbls., ¼-inch choke. Quintana Oil Co. No. 27-C O'Connor, 5,925 feet, 1,496 bbls., ⅜-inch choke.

Nueces County

Agua Dulce field: Union Producing Co. No. 4-A Rivers, 7,202 feet, plugged back 6,450 feet, 12 bbls. distillate, 1,750,000 feet of gas, 3/16-inch choke. Luby field: Seaboard Oil Co. No. 8 Luby, perforated casing 5,066½-70 feet, 122 bbls., ⅛-inch choke. Seaboard Oil Corp. No. 19 Luby, perforated casing 5,065-68½ feet, 195 bbls., ⅛-inch choke. Stanolind Oil & Gas Co. No. 2 Spessard, 5,725 feet, 121 bbls., ⅛-inch choke. Southern Mineral Corp. No. 5 Page, 4,869 feet, plugged back 4,423 feet.

(Continued on Page 150)

West, Central and Panhandle Texas

New Pool or Big Extension in Southwestern Yoakum Area

By MITCHELL TUCKER

FORT WORTH, Tex., May 16.—New locations in the West Texas Basin rose to 37 in the past week, as compared with 23 for the previous seven-day period. Thirty-nine completions were made, six of which were dry and abandoned. An extensive leasing campaign in the southern portion of the basin, possible new fields or extensions in Yoakum and Andrews counties, together with the interest in several of the basin's many wildcats, headed developments.

Leasing Southern Basin

Leasing play has, temporarily at least, turned from the northern portion of the Permian Basin to the extreme southern row of counties in the western part of Texas, bordering along the Mexican line. Gulf Oil Corp. became a prominent factor in that section last week by purchasing 100,000 acres in southern Culbertson County, extending southeast through the corner of Reeves County, across Jeff Davis County, and into northern Brewster County. Purchase was made from the Grisham-Hunter Corp. of Abilene, which retains about 150,000 acres through the region. Humble Oil & Refining Co. and Sun Oil Co. have already taken extensive blocks in that general region. The increasingly attractive possibilities for Ordovician production south of the basin fields proper stimulated the leasing play.

Yoakum County

Either a major 4½-mile extension to the Yoakum County portion of the Wasson field, or a new pool opener in the southwestern portion of that county, was definitely established last week. Shell Petroleum Co. No. 1 Mrs. Dora Roberts, section 793, Block D, Yoakum County, flowed 566 bbls. of oil on official test after stage treating with 8,000 gallons of acid, total depth 5,100 feet. This well is separated from the Wasson field by the Texas Co. No. 1 Walker, a small producer to the northwest of Wasson proper. Shell's No. 1 Roberts topped saturation considerably higher than producers in the Walker or Wasson wells.

Gaines County

Another "high and dry" well in the Permian Basin will be abandoned after failing to find porosity in an otherwise attractive thick section of saturated lime. Finley & Cherry and Sawyer Drilling Co. No. 1 Paul W. Dalmont, wildcat in southern Gaines County, about 5 miles northwest of the one-well Kirk pool, is preparing to plug and abandon at its total depth of 4,923 feet. Although it ran more than 200 feet higher than the Kirk discovery well, and cored over 100 feet of "bleeding lime," it failed to produce after shooting and acidizing due to a lack of effective porosity. Only sulfur water was recovered in the lower 6 feet of hole cored.

Andrews County

Every operator in the northern portion of the West Texas district has justification for closely watching the territory's deepest test as it cores carefully through a porous and slightly saturated section of Permian over 3,000 feet into the Big lime. Frank S. Perkins and others No. 1 Cowden, a proposed 8,000-foot test in southwestern Andrews County, about 3 miles from the New Mexico line, cored lime showing oil and gas with pinpoint porosity beginning at 7,699 feet and continuing irregularly to 7,780 feet, present drilling depth. This is the deepest point in the Permian section that any evidence of production has been shown. This test was originally drilled to 5,001 feet by the American Liberty Oil Co., and temporarily abandoned after showing nothing in the Delaware or Double Mountain zones of the Big lime. Frank S. Perkins, J. W. McMillen and Fred S. Wright took over the well for the present deepening enterprise to 8,000 feet. It was expected that this level would afford a testing of the Ordovician.

Hopes increased for a possible new field 5 miles west of the Fuhrman pool in Andrews County last week, as H. S. Forgeron No. 1 Lockhart and Brown, wildcat in south central Andrews County, cored irregularly-occurring porous zones, and bailed some free oil at 4,405-83 feet. Coring and testing continues below this depth.

To the north 3½ miles, Seaboard Oil Co. No. 1 Thornberry has been temporarily abandoned at 4,767 feet, after failing to find sufficient porosity to produce in an oil stained section of lime.

Attention has been quickly turned to Atlantic Refining Co. No. 1 Texas Co.-University, wildcat in southern Andrews County, and 5 miles northwest of the Goldsmith field in Ector County. The anhydrite, first reliable marker in the area, has been topped favorably and drilling continues below 2,000 feet. Deep core tests were formerly made of this area, which yielded large showings of gas in the Yates sand. Informed geologists think it is entirely possible for this well to extend the already huge Goldsmith structure 5 miles northwest into Andrews County. Location is in section 26, Block 11, University Survey.

Hockley County

Gulf Oil Corp. finally completed its 2½-mile southwestern extension to the Slaughter field as a small pumper. No. 1 Mallett gauged 31 bbls. of oil and 111 bbls. of water, after being shot and acidized at its plug-back depth of 5,020 feet. The southwestern limits of production are temporarily defined by this small producer.

Pecos County Ordovician

Along the center of Ordovician exploration in West Texas, Magnolia Petroleum Co. and Tex-Mex Oil Co. No. 1-A McKee, in the Imperial area of northern Pecos County, is expected to go out of the Simpson into the Ellenburger (lower Ordovician) at any time. It is drilling below 6,060 feet in tan Dolomite, topped at 6,032 feet. No showings of oil have been recorded since the section at 5,271-80 feet was tested last February.

WEST CENTRAL DISTRICT

Spudding of a north offset and staking of a northeast outpost to the Pardue pool discovery well of Forest Development Corp. and J. W. McMillen in southern Haskell County, together with three extensions to areas of Palo Pinto lime producing areas held principal attention in West Central Texas for the past week.

Forest Development Corp. No. 2 Pardue, north of the Haskell discovery, logged 4 feet higher on first lime markers in drilling past 1,420 feet as the week ended, and definite completion of the pool opener was postponed until more accurate information could be obtained on the pay zone in the second well. No. 2 Pardue, a rotary, is 2,100 feet from the north and 550 feet from the west lines of M. Collum Survey No. 4. No. 1 Pardue was tubed and made several natural flows by heads from the Adams Branch lime saturation at 2,795 to 2,815 feet, but still showed water below that point.

Among many blocks held in Haskell County, and on which drilling is contemplated soon, first location announced was Algord Oil Co. and Foundation Oil Co. No. 1 J. F. Jones, three-quarters of a mile northeast of the Pardue discovery, 330 feet from the southwest corner of E. T. Roche Survey No. 4, Abstract 525 Owners of the pool opener may request that the location be changed for a 40-acre spacing pattern as first agreed upon by offset operators.

Avoca Extended

A west extension and a northeast extension were given the Avoca field. Humble Oil & Refining Co. No. 2 R. B. Spencer & Co. flowed 35 bbls. hourly while cleaning itself after a 1,000-gallon acid treatment at 3,276-91 feet, to prove a quarter-mile west spread for the pool in section 195, B.B.B.&C. Survey, Jones County.

Second producer for Fain-McGaha Oil Corp. and Sinclair Prairie Oil Co. on the Swedish Lutheran church 80 acres in section 190, B.B.B.&C. Survey, was flowing 60 bbls. hourly after 2,000-gallon acidization at 3,263-72 feet to give the pool a one-location northeast extension. Lewis Production Co. was scheduled to move in rotary for a direct east offset. Charles J. Kleiner staked a location in section 19-3, H.&T.C. Survey, a mile and a half northeast of the church property, for an outpost and was building derrick.

Five miles northeast in Shackelford County's Ivy pool, Iron Mountain Oil Co. gave a quarter-mile north spread to the deep lime pay when its No. 2 D. A. Ivy flowed 60 bbls. hourly from acidized Palo Pinto lime at 3,213-27 feet. Ungren & Frazier and Ambassador Oil Corp. of Fort Worth bought a half interest in 91 acres near an outpost north of the Ivy area from Carl Shoults and E. V. Mitchell of Abilene for $4,000 cash.

Helmerich & Payne, contractors, were scheduled to begin deepening Forest Development Corp. No. 1 T. G. Hendrick, 5 miles northeast of the Ivy area, to test Ellenburger lime with rotary. The hole is bottomed at 3,163 feet. It is in section 1, A.B.&M. Survey.

Four producers were completed in the Jones County Lewis pool, one gauging the largest natural flow and giving a one-location east extension. It is the Healey & Walter No. 1 Daughtry, in section 37-15, T.&P Survey, which made 309 bbls. in 14½ hours from shallow sand.

PANHANDLE REVIEW

The completion of 11 oil wells in the Panhandle area last week gave the field an added potential of 4,785 bbls.

Lipscomb County, in the extreme northeastern part of the Panhandle received a new wildcat last week when Tieman & Thompson staked a location on a 10,000-acre block about 4 miles east of the town of Lipscomb.

WEST TEXAS COMPLETIONS

(24-hour gauges)

Crane County

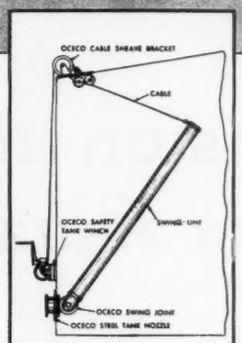
Bert Fields No. 16 Anna Gibbs, 2,298-2,313 feet, 519 bbls. Shell Petroleum Corp. No. 1-B University, 3,400-3,724 feet, 238 bbls.; No. 1-C University, 3,389-3,599 feet, 120 bbls.

Fisher County

Lewis Production Co. No. 6 Morrow, dry and abandoned at 3,580 feet.

Ector County

Continental Oil No. 7 T. & P. Land Tr., 4,000-4,180 feet, 2,057 bbls. Gulf Oil Corp. No. 91 Goldsmith, 4,080-4,205 feet, 1,984 bbls.; No. 92 Goldsmith, 4,129-4,205 feet, 2,160 bbls.; No. 93 Goldsmith, 4,070-4,195 feet, 1,088 bbls. Magnolia Petroleum Co. No. 5 Slator, 4,180-4,285 feet. 194 bbls. Mid-Continent Oil No. 5 Cowden, 4,028-4,173 feet, 1,475 bbls. Phillips-Pure No. 23 Cowden, 4,103-58 feet, 2,210 bbls.; No. 24 Cowden, 4,090-4,153 feet, 1,811 bbls.; No. 25 Cowden, 4,123-88 feet, 1,383 bbls. Rogers & Rogers No. 4 T. & P. Land Tr., 4,196-4,285 feet, 31 bbls. Rushwold Oil No. 2-A Connell, 3,428-3,660 feet, 557 bbls. Shell Petroleum Corp. No. 11-B Cowden, 4,020-4,218 feet, 919 bbls. Sinclair Prairie No. 6 Johnson, 4,210-78 feet, 472 bbls. Sunray Oil No. 3 Johnson, 4,180-



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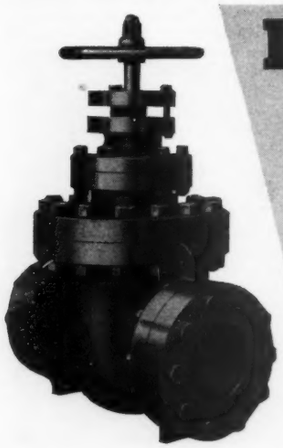

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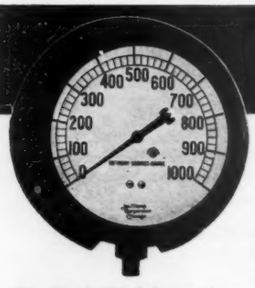

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4,273 feet, 770 bbls. Joe A. Worsham No. 3 Connell, 3,380-3,656 feet, 382 bbls.

Gaines County

M. K. B. Drilling Co. No. 1 A. L. Wasson, 4,885-4,976 feet, 1,711 bbls.

Howard County

Eastland Oil No. 4 Chalk, 2,915-3,178 feet, 1,287 bbls. Iron Mountain Oil No. 6 Snyder, 2,680-2,880 feet, 777 bbls. Moore Brothers No. 1 Edwards, dry and abandoned at 3,018 feet; No. 7-A T. & P. Land Tr., 2,554-2,816 feet, 824 bbls. Sinclair Prairie No. 55 Dodge, 2,570-2,810 feet, 350 bbls.

Menard County

Forest Development Co. No. 1 Corbell, dry and abandoned at 1,725 feet.

Mitchell County

Jameson-Pollard-Foster No. 1 W. H. Badgett, 3,025-87 feet, 20 bbls.

Pecos County

Big Bend Pipe Line Co. No. 1 Iowa Realty Co., 1,628-53 feet, 285 bbls. Childress Royalty No. 1 Masterson, dry and abandoned at 1,545 feet. J. J. Dorr No. 3 Payton, 1,971-2,058 feet, 266 bbls. A. E. Lynch No. 1 Cordy, 2,080-2,190 feet, 83 bbls. Pecos-Onondaga No. 1-B Shearer, dry and abandoned at 1,699 feet. H. I. Waid No. 1 Scharff-Blackman, dry and abandoned at 1,878 feet.

Upton County

Bennett Oil No. 6 Sherk, abandoned location. Devore & Minnich No. 13 Burleson, 2,089-2,155 feet, 387 bbls. Bennett Oil No. 6 Sherk, 2,550-99 feet, 635 bbls. George F. Getty No. 2 Sherk, 2,652-77 feet, 1,204 bbls. Gulf Oil Corp. No. 13 Rogers, 2,240-2,334 feet, 615 bbls. R. H. Henderson No. 3 Herrington, dry and abandoned at 2,963 feet. Pittman & Simco No. 1 Elders, 2,194-2,278 feet, 789 bbls. T. & P. Oil Co. No. 33-A Lane, 2,134-48 feet, 500 bbls.

Ward County

Gulf Oil Corp. No. 103 Hutchins, 2,609-2,800 feet, 717 bbls. Humble Oil & Refining Co. No. 37 Richter, 2,835-2,923 feet, 995 bbls. W. C. Proctor No. 2 Johnson, 2,200-67 feet, 186 bbls. J. Elmer No. 1 M. L. Johnson, dry and abandoned at 2,115 feet.

Winkler County

Humble Oil & Refining Co. No. 14-B Colby, 2,749-3,045 feet, 425 bbls.; No. 6-D Walton, 2,799-3,022 feet, 697 bbls. Sid Richardson No. 1 Continental-Jenkins, 3,345-68 feet, 250 bbls.

Yoakum County

Shell Petroleum Corp. No. 1 C. A. Cowden, 4,840-5,040 feet, 596 bbls. Gulf Oil Corp. No. 1 Dixon, dry and abandoned at 5,491 feet.

PANHANDLE COMPLETIONS

(24-hour gauges)

Carson County

Magnolia Petroleum Co. No. 39 fee (244), 2,930-35 feet, 113 bbls.

Gray County

Cities Service No. 4 Hughey "B," 3,193-3,300 feet, 406 bbls. Kewanee Oil & Gas No. 8 Morse-Adams, 2,400-82 feet, 299 bbls. Sinclair Prairie No. 2 Albert Combs, 2,900-72 feet, 154 bbls.

Hutchinson County

Barnsdall Oil Co. No. 9 Lewis, 2,916-85 feet, 764 bbls. Cree & Hoover No. 2 Jamison, 2,890-2,920 feet, 250 bbls. Drilling & Exploration Co. No. 17 Watkins, 2,890-2,910 feet, 466 bbls.; No. 18 Watkins, 2,890-2,910 feet, 488 bbls. Midstates Oil Co. No. 18 Whittenburg A, 2,913-66 feet, 771 bbls. Phillips Petroleum Co. No. 33 Cockrell Ranch, 2,920-35 feet, 666 bbls. Stekoll Oil Co. No. 4 Whittenburg C, 2,880-2,970 feet, 438 bbls.

WEST CENTRAL TEXAS COMPLETIONS

Jones County

Thomas D. Humphrey No. 1 R. G. Young, abandoned dry at 2,001 feet, total depth. Fain-McGaha Oil Corp. No. 3 Claude Lewis, 450 bbls. in 18 hours, flowing from 1,928-50 feet after 40-quart shot. Petroleum Producers No. 5 Jessie S. Milsap and others, 288 bbls. daily, flowing from 1,931-56 feet after 40-quart shot. King Oil Co. No. 4 C. L. Carter, 305 bbls. in 12 hours

(Continued on Page 150)

California Field Report

By
L. P. STOCKMAN

Two Prospective Gas Fields; Big Well in Rio Bravo Field

LOS ANGELES, Calif., May 16.—Richfield Oil Corp. has apparently discovered a dry gas field in Solano County as its No. 1 Potrero Hills in section 10-4-1 blew in late in the week while the crew was withdrawing a core barrel. A core had been taken at 3,250 feet and on the way out of the well built up sufficient pressure to blow the barrel out of the hole. A blowout preventer kept the well under control but as no heavy mud was on the ground the crew could do very little. A leak developed in the flange below the blowout preventer and the well at last reports was making about 2,500,000 feet of gas through the leak. The crew obtained a supply of heavy mud and is at present mudding off the gas. The formation above the gas zone was a hard sandy shale and there was no indication of gas until the core barrel was expelled and the well began flowing through the leak. Richfield Oil Corp. has leases on approximately 8,000 acres in the Potrero Hills structure. With this showing there is a strong probability that two new gas fields will be proved up within the next 30 days as Ohio Oil Co. appears almost certain of finding a commercial accumulation at Willows where its first wildcat was destroyed by a blowout a few months ago. Ohio Oil Co. is testing and making good footage in No. 1-A Willard, the second test in section 18-20-2.

Price Reduction in Santa Maria

The reduction of 10 cents per barrel in the price of fuel oil and diesel by Standard Oil Co. on May 10 and announcement of Union Oil Co. that the posted price of crude oil in the Santa Maria Valley field would be reduced approximately 25 cents per barrel on May 20, should have emphasized to California operators the past week that conditions are as critical as they were a month or two ago and that each barrel of crude oil or refined products put into storage further intensifies the situation. Crude oil production dropped down to 675,000 bbls. per day for a short period during the past week but bounded back up again to 690,000 bbls. when operators in the Lake View section of the Midway-Sunset field resumed production following a 10-day production moratorium.

Santa Maria Valley crude oil which has a gasoline content of about 20 per cent on the basis of 46 cents per barrel for 17-gravity oil, can be laid down on the Atlantic seaboard at about $1.15 per barrel. Union Oil Co. would probably like to dispose of about 250,000 bbls. at this price in order to lighten inventories as this crude has been going to storage quite regularly for several months. There would be no profit in a deal of this kind but it would provide additional working space from a tankage standpoint.

George F. Getty, Inc., in the Rio Bravo field of Kern County, completed No. 1 Ramsey in section 35-28-25, flowing 6,350 bbls. of clean 37.7-gravity oil and 6,000,000 feet of gas per day from 11,509 feet. This new well, which has 134 feet of rich oil sand, came in without the necessity of swabbing. Production was subsequently reduced to 3,500 bbls. per day by reducing the bean from 1-inch to 36/64-inch and it is intended to cut back to about 500 bbls. per day in conformity with field curtailment. No. 1 Ramsey was finished with an aluminum liner and under a 36/64-inch bean shows tubing and casing pressures of 1,300 pounds. Superior Oil Co. No. 3 Wagner in section 35-28-25, is drilling ahead at 11,142 feet on top of the pay. Union Oil Co. has suspended work on No. 2-34 Kern County Land in section 34-28-25 at 11,204 feet due to mechanical trouble but has staked location for No. 4-34 Kern County Land and will have two strings of tools in operation as soon as this is spudded in. General Petroleum Corp. is starting two new wells and George F. Getty, Inc., and Superior Oil Co. are each starting one new well.

Canal—Greeley

In the Greeley field of Kern County, Standard Oil Co. picked up the Rio Bravo oil sand and to date has cored 70 feet of rich sand in No. 11-Z Kern County Land. Indications point to an early production test. This well was going ahead a few days ago at 11,488 feet, 70 feet in an oil sand that looked very good. Every indication points to a successful completion. If the Rio Bravo zone is productive in the Greeley field it will confirm the expectation that the same zone will be found productive in the Ten Section and Canal fields. Standard Oil Co. No. 11-13 Kern County Land in section 20-29-26, was completed flowing 798 bbls. of clean 37.1-gravity oil per day from 7,745 feet after the hole had been carried down to 7,780 feet and then plugged back because of bottom water. In the completion of this new well Standard landed a blank string of 6⅝-inch and then perforated at 7,736-51 feet and landed 7,732 feet of 2½-inch tubing with packer at 7,710 feet. The company's No. 11-14 Kern County Land, in section 18-29-26, was completed flowing 312 bbls. of clean 32.9-gravity oil and 150,000 feet of gas per day from 7,800 feet after the hole had been carried down to 7,848 feet and then plugged back because of bottom water. It is flowing through a 24/64-inch bean and shows a tubing pressure of 130 pounds and a casing pressure of 170 pounds.

In the Canal field, Shell Oil Co. completed No. 81-A Kern County Land flowing 1,836 bbls. of clean 35.7-gravity oil and 1,770,000 feet of natural gas per day from 8,350 feet, tubing pressure 90 pounds and casing pressure 1,075 pounds. It extends the field one location north. No. 81-A Kern County Land of Shell Oil Co. was finished with 163 feet of 4¾-inch aluminum liner carrying perforations at 8,203-87 feet and at 8,317-47 feet and 8,143 feet of 2½-inch tubing. The Canal field is being developed by Shell and Ohio Oil Co.

Wilmington

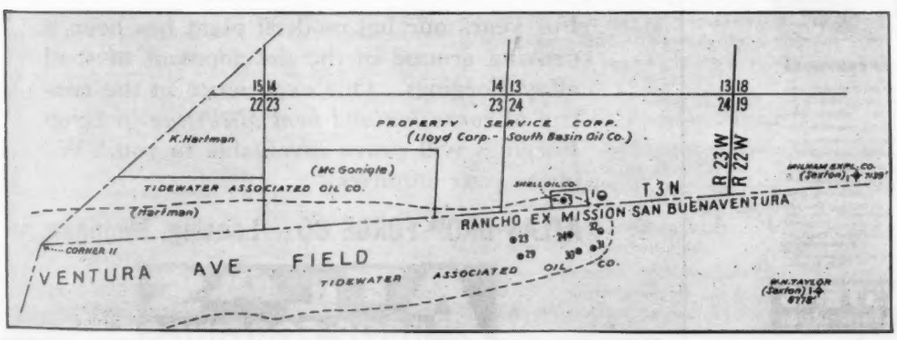
Operators in the Wilmington field completed six wells and recompleted another after plugging back to the Ranger zone. The latter was No. 1 Gurnsey of Richfield Oil Co., which was carried down to 6,078 feet and then plugged back when the Upper and Lower Terminal zone and the Ford zone were found barren. The well has been returned to production flowing 114 bbls. of 17.2-gravity oil per day from the Ranger zone at 3,012 feet. Richfield Oil Corp. completed No. 4 Proctor & Gamble, flowing 1,820 bbls. of 21.5-gravity oil per day from 4,310 feet. This well

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	May 6		April 29			
Intercoastal-domestic—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	70,214	10,031	140,394	.....
Diesel and gas oil	.....	.....	.....	.....	.....	176,726
Gasoline	.....	.....	51,183	7,312	921,778	996,676
Kerosene	.....	.....	66,878	9,554	199,453	130,040
Foreign exports—						
Crude oil	724,155	103,451	804,682	114,955	9,164,564	4,740,833
Fuel oil	185,535	26,505	176,943	25,278	2,781,779	4,882,229
Diesel and gas oil	108,106	15,444	527,959	75,423	2,087,784	2,527,364
Gasoline	37,156	5,308	296,785	42,398	2,339,836	2,496,611
Kerosene	21,192	3,027	5,421	774	432,163	894,236
Other unfinished oil	.....	.....	.....	.....	.....	290,354
Coastwise-domestic—						
Crude oil	273,550	39,079	297,190	42,456	4,341,438	2,218,300
Fuel oil	280,223	40,032	205,065	29,295	4,075,438	5,239,222
Diesel and gas oil	13,437	1,920	18,740	2,677	634,724	917,052
Gasoline	403,046	57,578	422,978	60,425	5,310,638	4,230,897
Kerosene	.....	.....	.....	.....	106,043	67,347

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Diesel and gas oil	.....	.....	.....	.....	178,662	152,932
Gasoline	.....	.....	.....	.....	9,499	25,778
Asphalt	.....	.....	67,829	9,690	212,419	65,790
Lubricants	.....	.....	.....	.....	3,009	6,848
Foreign exports—						
Crude oil	73,992	10,570	86,232	12,319	1,975,915	1,057,394
Fuel oil	29,613	4,230	22,071	3,153	698,807	657,730
Diesel and gas oil	.....	.....	4,106	587	529,294	1,043,880
Gasoline	102,738	14,677	146,540	20,934	1,676,440	2,072,876
Kerosene	.....	.....	87,901	12,557	301,247	285,903
Lubricants	.....	.....	2,947	421	148,287	242,405
Coastwise-domestic—						
Fuel oil	138,122	19,732	69,806	9,972	2,274,510	2,091,047
Diesel and gas oil	16,065	2,295	30,137	4,305	555,357	233,520
Gasoline	140,387	20,055	146,712	20,959	2,201,402	1,465,096
Kerosene	.....	.....	21,603	3,086	257,363	66,108



The Lloyd Corp., headed by Ralph B. Lloyd, is drilling an outpost north and east of production in the extreme eastern end of the Ventura Avenue field

STANDARD OIL CO. OF CALIFORNIA AND UNION OIL CO.

Crude oil prices at the well effective June 22, 1936

Gravity—	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Dominguez	Elwood Terrace	Torrance	Richfield	Whittier E. Coyote (La Habra)	Montebello	W. Coyote Hills	Santa Fe Springs	Mountain View	Elk Hills Buena Vista Hills Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Santa Paula*	Orcutt*
14-14.9	$.80	$.79	$.74	$.78	$.79	$.80	$.76	...	...	...	$.80	$.76	$.76	$.77	$.78	...	...	$.70	$.70	$.70	...	...	$.70	
15-15.9	.80	.79	.74	.78	.79	.80	.76	...	...	...	.80	.76	.76	.77	.78	...	...	.70	.70	.70	...	...	.70	
16-16.9	.80	.79	.74	.78	.79	.80	.76	...	...	...	.80	.76	.76	.77	.78	...	...	.70	.70	.70	...	...	.70	$.70
17-17.9	.80	.79	.74	.78	.81	.80	.76	...	...	...	.80	.76	.76	.77	.78	...	...	.70	.70	.70	...	...	.71	.70
18-18.9	.80	.79	.74	.78	.84	.80	.78	...	...	...	.82	.76	.76	.77	.78	...	...	.70	.70	.70	...	...	.73	.72
19-19.9	.82	.79	.74	.82	.87	.84	.81	...	...	...	.85	.76	.78	.77	.78	...	$.70	.74	.74	.71	$.70	...	.75	.74
20-20.9	.85	.79	.74	.85	.90	.88	.84	...	...	...	.88	.78	.82	.77	.80	...	.70	.78	.78	.72	.70	...	.77	.77
21-21.9	.88	.79	.74	.89	.93	.93	.88	...	...	...	.91	.80	.85	.77	.84	$.78	.73	.82	.82	.74	.70	...	.79	.80
22-22.9	.92	.82	.74	.92	.96	.98	.92	...	...	...	.93	.84	.89	.79	.88	.78	.77	.87	.86	.78	.72	...	.82	.83
23-23.9	.95	.86	.77	.96	.99	1.02	.96	$.84	$.79	...	.96	.88	.93	.82	.92	.78	.80	.92	.90	.82	.76	...	.85	.86
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	...	.99	.91	.96	.85	.96	.82	.84	.97	.94	.86	.79	...	.87	.88
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	...	1.02	.95	...	.89	.99	.86	.88	1.01	.98	.90	.83	...	.90	.91
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	...	1.05	.98	...	.92	1.03	.90	.91	1.06	1.02	...	...	...	.92	.93
27-27.9	1.10	1.05	.88	1.11	1.12	...	1.10	1.03	.88	...	...	1.02	...	.96	1.06	.95	.95	1.10	1.06	...	...	...	.95	...
28-28.9	1.14	1.10	.90	1.14	1.15	...	1.14	1.07	.90	...	...	1.06	...	.99	1.10	.99	.99	1.15	1.10	...	...	...	.97	...
29-29.9	1.17	1.15	.93	1.18	1.18	F.O.B.	1.17	1.12	.93	...	...	1.09	...	1.03	1.14	1.03	1.02	1.20	1.14	...	...	...	.99	...
30-30.9	1.21	1.19	.95	1.22	1.21	our	1.21	1.17	.95	F.O.B.	...	...	...	1.07	1.17	1.08	1.06	1.25	1.18	...	...	...	1.01	...
31-31.9	...	...	...	...	1.24	Pipe	1.24	1.22	.97	Ship	...	...	...	1.11	1.21	1.12	1.09	1.29	...	...	...	...	...	...
32-32.9	...	...	...	...	1.27	Line	1.27	1.27	1.00	...	...	...	...	1.14	1.25	1.16	1.13	1.34	...	...	...	...	...	...
33-33.9	...	...	...	...	...	...	...	1.32	...	$1.28	...	...	...	1.18	1.28	1.20	1.17	1.38	...	...	...	$1.19	...	...
34-34.9	...	...	...	...	...	...	...	1.37	...	1.32	...	...	...	1.22	1.32	1.25	1.20	...	...	...	...	1.23	...	...
35-35.9	...	...	...	...	...	...	...	1.42	...	1.35	...	...	...	1.25	...	1.29	...	...	...	...	...	1.27	...	...
36-36.9	...	...	...	...	...	...	...	1.46	...	1.39	...	...	...	1.29	...	1.33	...	...	...	...	...	1.31	...	...
37-37.9	...	...	...	...	...	...	...	1.51	...	1.43	...	...	...	1.32	...	1.37	...	...	...	...	...	1.35	...	...
38-38.9	...	...	...	...	...	...	...	1.56	...	...	...	...	...	1.36	...	1.42	...	...	...	...	...	1.39	...	...
39-39.9	...	...	...	...	...	...	...	1.61	...	...	...	...	...	1.40	...	...	...	...	...	...	...	1.43	...	...
40-40.9	...	...	...	...	...	...	...	1.66	...	...	...	...	...	1.43	...	...	...	...	...	...	...	...	...	...

Newhall, McKittrick, Kern River, Kern Front and Round Mountain, 70 cents for all grades. *Posted by Union Oil Co. Same company's Brea Canyon schedule stops at $1.14 for 28 degrees and over, and Belridge and Lost Hills schedule stops at $1.32 for 37 degrees and over. By Standard Oil Co., effective October 15: El Segundo, 14 to 18.9 degrees, 80 cents; 19-19.9, 82 cents; 20-20.9, 85 cents; 21-21.9, 88 cents; 22-22.9, 92 cents; 23-23.9, 95 cents; 24-24.9, 99 cents; 25-25.9, $1.03; 26-26.9, $1.06; 27-27.9, $1.10; 28-28.9, $1.14; 29-29.9, $1.17; 30-30.9, $1.21. Wilmington, 14 to 16.9, 75 cents; 17-17.9, 77 cents; 18-18.9, 79 cents; from 19 degrees upward, prices same as Signal Hill.

was deviated southwest under the plant of Proctor & Gamble in order to develop the acreage to the maximum degree. Directional drilling has been employed more in the Wilmington field than in any other area in the state and there are a number of additional locations yet to be reached. General Petroleum Corp. drilled a number of wells, the bottoms of which are beneath the Ford plant and Union Pacific Railroad Co. is drilling several locations beneath the steam generating plant of Southern California Edison Co. Additional wells will eventually be deviated beneath the ship channel and later it may be found advisable to deviate one or more wells beneath the Craig shipbuilding plant and other similar structures.

Superior Oil Co. completed No. 8 Back Bay flowing 2,180 bbls. per day with bottom of the hole at 3,901 feet. From the Terminal zone this well is producing 1,850 bbls. of 28.3-gravity oil and from the Ranger zone it is producing 330 bbls. of 17.8-gravity oil through a 22/64-inch bean. General Petroleum Corp. completed Nos. 8 and 14 Harbor Community lease, the former flowing 360 bbls. 18.1-gravity oil daily from the Ranger zone at 2,960 feet and the latter flowing 2,065 bbls. of clean 26.5-gravity oil daily from the Terminal zone at 3,920 feet. No. 8 Harbor was gravel packed after 517 feet of 4¾-inch liner including 398 feet of perforated had been landed on bottom but No. 14 Harbor was brought in without the use of gravel.

Union Pacific Railroad Co., largest holder of fee acreage in the Wilmington field, completed No. 5-E flowing 1,310 bbls. of clean 25.6-gravity oil per day from the Terminal zone at 3,952 feet. A 6⅝-inch flow string with packer was landed at 2,921 feet and the hole finished with 3,462 feet of 2½-inch tubing. Hogan Petroleum Co. completed No. 2 Graham flowing 205 bbls. of clean 17.3-gravity oil per day from 3,080 feet

The Continental Steel Corporation of Kokomo, Indiana, is another of the many careful-buying firms who have chosen Layne Wells and Pumps. Their five large rock wells produce 4,000 gallons of water per minute.

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after the hole had been finished with 369 feet of 6⅝-inch liner including 350 feet of 60-mesh landed on bottom and 2,837 feet of 2½-inch tubing with packer. General Petroleum Corp. has been reducing its drilling program in the Wilmington field during the past few weeks but Richfield Oil Corp. has embarked on an aggressive development program involving its Pacific Dock lease. Union Pacific Railroad Co. has completed all necessary offsets and is now able to pursue a normal drilling program covering inside locations. If operators continue at the present rate it will be several months before the end of drilling is in sight in this field.

Kettleman North Dome

In the Kettleman North dome field, Standard Oil Co. No. 41-7-Q in section 7-22-18, was completed flowing 1,776 bbls. of clean 33.8-gravity oil and 44 bbls. of water along with 1,500,000 feet of gas per day from the Temblor zone at 8,150 feet. It was carried down to 8,348 feet and plugged back because bottom water was brought in flowing through open line. Standard's deep test, No. 27-21-J, in section 21-21-17, has been plugged back from 10,919 feet to 10,853 feet but will be plugged back to 10,806 feet as water has been located in the hole at 10,806-28 feet and at 10,829-33 feet. The crew is fishing for tubing lost in the bottom of the hole.

Kern County

Continental Oil Co., discoverer of the new Wasco field in Kern County, will start a second well down to the deep zone within the next three weeks and Standard Oil Co. will drill two new wells to the west and south. Operators interested in the area due to the extreme depth at which production is secured are endeavoring to agree on a plan limiting drilling operations to one well to 40 acres instead of the usual 20 acres. Kern County Land Co. has approved Continental's request that development be carried on conservatively and the latter will be obliged to run only one string of tools. Continental Oil Co.'s discovery well was completed last month under a natural flow from a depth of 15,004 feet.

Ohio Oil Co. was still drilling ahead in No. 8-A Kern County Land, a deep test in the Buena Vista district of Kern County, and may drill ahead to the Rio Bravo zone making a production test of the oil sand cored just below 10,000 feet. This test cored the Stevens zone and has 98 feet of excellent oil sand. The probable pay was cored in the interval from 10,022 feet to 10,152 feet and no oil sand was logged below 10,152 feet. The present formation at 10,288 feet is a shale and gray sand.

Union Oil Co. is swabbing No. 1 Berry, a wildcat in the Arvin district of Kern County in the extreme southern end of San Joaquin Basin. The well is showing a little oil and gas-cut mud at last reports.

Ohio Oil Co. is abandoning No. 1 Ford, a deep test in the South Belridge field in Section 6-29-22, as a duster at 7,275 feet.

East of the Midway-Sunset field, the Texas Co. has cored some good looking oil sand in No. 1 Pioneer, a wildcat in section 33-11-23, at 8,444 feet and a 9-inch liner has been run to test 34 feet of oil sand in the bottom of the hole. A formation test proved inconclusive as the only recovery was some gas-cut mud, with no oil or water.

Mount Poso—Round Mountain

In the Mount Poso field, Ring Oil Co. completed No. 3 Loudon in section 32-26-28, pumping 281 bbls. of 15.8-gravity oil daily from 1,710 feet after finishing the hole with 37 feet of 7-inch liner including 15 feet of perforated landed on bottom. Last week Ring Oil Co. completed No. 4 Shapiro pumping 291 bbls. daily from 1,722 feet. Shell Oil Co. has completed No. 6-A Mathews fee in section 4-27-28, pumping 150 bbls. per day from 1,671 feet. This well was still building up and cleaning up at the close of the week and may result in substantially higher production after it has been on production for another few days. On the Security lease Shell has concluded drilling operations on well No. 23 at 1,675 feet and will rig up pumping equipment at once. In the Round Mountain field H. A. McDonald has completed No. 3 Larkin, pumping 245 bbls. of clean 14.5-gravity oil per day from 1,938 feet but is experiencing considerable difficulty disposing of production from the lease following failure to conform with curtailment. At present current production is being taken by Golden Bear Oil Co. on a day-to-day basis. On the Staley property, Crestmont Oil Co. has completed well No. 3 pumping 60 bbls. of very clean 15.2-gravity oil per day from 1,680 feet after the hole had been finished with 77 feet of 6⅝-inch liner including 19 feet of perforated landed on bottom and 1,576 feet of 2½-inch tubing. Shell Oil Co. has concluded drilling operations on No. 19 Freeman in section 20-28-29 at 1,830 feet and pumping equipment is at present being rigged up.

Coastal Area

In the Capitan field of Santa Barbara County, General Petroleum Corp. completed No. 22 Erburu in section 32-5-30, pumping 138 bbls. of clean 21.2-gravity oil per day from the Vaqueros at 1,400 feet. Top of the Vaqueros was logged at 1,321 feet and the hole was finished with 118 feet of 6⅝-inch liner including 85 feet of perforated.

In the Santa Maria Valley field where drilling operations have already been reduced in view of Union Oil Co.'s price cut, George F. Getty, Inc., completed No. 4 Vicente in section 27-10-34, flowing 3,970 bbls. of clean 16.2-gravity oil per day from 4,699 feet. Top of the Franciscan basement was logged at 4,690 feet and the hole was finished with 463 feet of 6⅝-inch liner including 425 feet of perforated landed on bottom. F. E. Jones No. 2 Wisconsin in section 27-10-34, has been completed pumping 174 bbls. of clean 16.1-gravity oil daily from 4,657 feet. Top of the Franciscan was at 4,645 feet and the hole was finished with 403 feet of 6⅝-inch liner including 347 feet of perforated landed on bottom.

In the Ventura Avenue field Tide Water Associated Oil Co. completed No. 68 Lloyd flowing 213 bbls. of 25.6-gravity oil cutting 10 per cent and 180,000 feet of natural gas per day from 4,800 feet. General Petroleum Corp. is still working on No. 13 Notten in this field and will probably plug back still further as it was swabbed in wet several days ago. The well is bottomed at 9,871 feet and to date has been plugged to 9,402 feet.

Rio Vista Gas Field

The Texas Co. has taken over 1,100 acres of Sacramento River land from the Midland Farms Co. in section 4-3-3, southeast of Rio Vista gas field of Solano County, and has staked location for its first well. On the Perry Anderson lease in the field Standard Oil Co. completed No. 1 flowing 31,700,000 feet of dry gas per day from 4,458 feet through a 1-inch bean. This well was finished with 221 feet of 5-inch liner including 186 feet of perforated landed at 4,456 feet and 4,446 feet of 2½-inch tubing. It is shut in and shows a tubing pressure of 1,700 pounds and a casing pressure of 1,710 pounds.

San Joaquin Basin

In the Fruitvale field Western Gulf Oil Co. has completed No. 35-B Kern County Land in section 14-29-27, flowing 398 bbls. of clean 18.2-gravity oil per day from 3,013 feet. This new producer was brought in flowing through a 28/64-inch bean. In the Midway-Sunset field, Standard Oil Co. completed No. 11 Monarch in section 7-11-23, pumping 43 bbls. of 13.5-gravity oil and 3 bbls. of water per day from 1,480 feet after finishing the hole with 268 feet of 6⅝-inch liner including 236 feet of 100 mesh landed at 1,478 feet. Hogan Petroleum Co. has just about finished rigging up rotary drilling equipment in No. 11 Porter Day in the Mountain View field and will probably begin drilling operations within the next few days. Shell has two potential producers nearing completion in the Ten Section field and should have them tanking oil within the next fortnight. In the McKittrick field Franco Western Oil Co. is making preparations to spud in No. 15 in section 8-30-22, and commercial production is expected unless the gas zone is encountered as happened in the last well.

Los Angeles Basin

In the East Coyote field Bartholomae Oil Co. completed No. 6 Stern pumping 272 bbls. of 25.3-gravity oil per day from 4,857 feet. The hole was finished with a string of blank 6⅝-inch landed at 4,849 feet and then perforated at 4,085-4,120 feet and at 4,165-4,320 feet.

In the Torrance field Standard Oil Co. recompleted No. 1 Martin pumping 289 bbls. of 27.2-gravity oil daily after redrilling and deepening the hole to 4,905 feet. Timco Oil Co. recompleted No. 6 Torrance after deepening the hole to 5,000 feet and returned the well to production pumping 141 bbls. of 26.8-gravity oil per day.

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La.-Ark. Fields

(Continued from Page 133)

faulting which is indicated in the new area by shooting pictures, and by the subsurface information obtained from the Pitts No. 1, the new test will be watched with considerable interest.

Production by Pool

Estimated daily gross production for the week ending May 14 follows:

NORTH LOUISIANA

	Bbls.
Bellevue	645
Caddo light	3,875
Caddo heavy	2,385
Converse	535
Cotton Valley heavy	110
Cotton Valley light	*12,360
De Soto and Red River	1,455
Elm Grove	325
Haynesville	2,915
Holly	80
Homer	2,635
Lisbon	11,040
Pleasant Hill	120
Rodessa	39,985
Sarepta-Carterville	275
Sligo	400
Sugar Creek	310
Urania	2,795
Zwolle	1,010
Total	83,255

SOUTH ARKANSAS

Buckner	465
Champagnolle	1,210
El Dorado	1,885
Lisbon	270
Miller County	390
Nevada	635
Rodessa	6,625
Schuler	9,325
Smackover light	2,060
Smackover heavy	16,360
Stephens	560
Troy	1,255
Urbana	1,245
Village	295
Total	42,570

Texas side of Rodessa field, 38,125 bbls. daily.
*3,665 bbls. is distillate.

Deep Test in Pierce County, Georgia, Is Abandoned

The Pan American Production Co. test near Hofferman, Pierce County, Georgia, topped granite at 4,347 feet and drilled into it to 4,376 feet before giving up. No shows of oil or gas were found at any level. The company has no immediate plans for future development in that area. The rig was being dismantled. Drilling was started on April 2.

Michigan Fields

(Continued from Page 142)

to new highs. Production records announced by the Michigan Oil and Gas Association show Buckeye continues to produce nearly half of all the state's oil. The April wells and runs:

	Wells	Daily runs
Porter-Yost	419	7,605
Greendale-Chippewa	253	1,934
Geneva-Midland	3	29
Edenville-Midland	4	981
Vernon-Leaton-Denver	93	1,360
Sherman-Isabella	60	3,593
Montcalm County	78	853
Beaverton-Gladwin	23	259
Bentley-Gladwin	11	635
Buckeye-Gladwin	403	27,361
Secord-Gladwin	2	58
Ogemaw County	215	2,821
Adams-Arenac	9	118
Clayton-Arenac	43	2,922
Saginaw-Hemlock	57	28
Birch Run	25	56
Dundee-Monroe	3	22
Allegan County	80	5,531
Muskegon County	90	128
Total	1,873	56,294

West Texas Fields

(Continued from Page 146)

from 1,931-43 feet after 40-quart shot. Healey & Walter No. 1 W. H. Daughtry, 309 bbls. in 14½ hours naturally from 1,898-1,917 feet. Mack Hays and Montour Production No. 1 Chittenden Estate, 190 bbls. in 24 hours from natural sand at 3,006-24 feet.

Shackelford County

John T. Cross No. 13-A Dennis Heirs, 10 bbls. daily from 530-41 feet. T. A. King and E. Williams No. 1 W. H. Stevens, 4 bbls. daily from 262-70 feet. Moutray & King No. 2 W. P. Newell, dry at 1,584 feet. Jones & Stasney No. 1 Merrick Davis, dry at 1,747 feet. Cady & Edwards No. 7 A. Hickman, dry at 370 feet. Charles J. Kleiner No. 2 J. P. Morris, abandoned at 1,713 feet. Loggie & Arendt No. 7 J. C. Ghio and others, 10 bbls. daily at 590-97 feet. Dickey Brothers No. 4 B. S. Walker, dry at 200 feet.

Taylor County

Bert Fields No. 1 Sears Estate, dry at 3,607 feet, total depth.

Fisher County

General Crude No. 1 R. M. Young, dry at 2,911 feet, total depth. Lewis Production Co. No. 6 Preston Morrow, dry at 3,580 feet, total depth.

Callahan County

E. N. Schaffer No. 7 B. B. Bond, 1½ bbls. oil, 1½ bbls. water per day at 283-312 feet.

Southwest Texas Fields

(Continued from Page 144)

perforated casing 4,235-40 feet, 1,400,000 feet of gas per day. West Saxet field: Heep Oil Co. No. 2 McKinzie, 5,814 feet, abandoned. Renwar Oil Co. No. 1-A Kenedy, 7,015 feet, temporarily abandoned Southern Minerals Corp. No. 1-B Rand Morgan, 5,831 feet, abandoned.

San Patricio County

Plymouth field: Plymouth Oil Co. No. 97-C Welder, perforated casing 5,871-75 feet, 7½ bbls. per hour, 9/64-inch choke.

Starr County

Los Olmos field: St. Mary Oil & Gas Co. No. 14 Unit, 802 feet, abandoned.

Webb County

Killam field: O. W. Killam No. 8 Garcia, perforated casing 1,985-95 feet, 30 bbls., pumping. O'Hern field: Houston Oil Co. No. 2-D Benavides 3,312 feet, abandoned. Oilton field: Daubert & Lipscomb No. 7-A Garcia perforated casing 2,002-08 feet, 125 bbls., ⅝-inch choke.

J. M. (Bob) Roberts, Shell Petroleum Corp. and J. L. Rune, Phillips Petroleum Co., in the Alice field, Jim Wells County

Oil Well Drilling Co. No. 5 Garcia, 1,988 feet, 36 bbls. ⅝-inch choke. Daubert & Lipscomb No. 1 Dickens, perforated casing 1,990-96 feet, 91 bbls., ¼-inch choke.

Zapata County

Comitas field: McKay & Upschurch No. 22 Haynes, 1,131 feet, 45 bbls., pumping. Escobas field: Texas Co. No. 113 Measles, 1,269 feet, 45 bbls., pumping.

Victoria-Calhoun Counties

Heyser field: Humble Oil & Refining Co. No. 21-A P. H. Welder, sand 5,485-93 feet, 281 bbls., 3/16-inch choke. Portilla Drilling Co. No. 24-C P. H. Welder, perforated casing 5,460-63½ feet, 97 bbls., 3/16-inch choke. Seaport Oil Corp. No. 1 Mae Dieiner, perforated casing 6,029-33 feet, 15 bbls., four hours, 3/32-inch choke. Placedo field: Barnsdall Oil Co.-American Liberty Oil Co. No. 13 J. M. Pickering perforated casing 5,971-85 feet, gas well.

Gulf Coast Fields

(Continued from Page 128)

the section showed from 12 to 16 per cent saturation and at 4,490 feet, the core showed 8 per cent saturation.

Two extensions to the Seabreeze field were made by Sun Oil Co. No. 1 R. J. Barrow, in the Willow Slough area, and about a half mile from production, perforated casing around 8,477 feet and the well is flowing into the pits, showing 35-gravity oil and 30 per cent wash water through an eighth-inch choke. No. 2 Seabreeze Land Co., 1,400 feet east of production, cored sand showing oil and gas at 8,679-8,749 feet and broken sand and shale showing oil and gas from 8,749-85 feet. The hole is bottomed at 8,854 feet, and 7-inch casing was cemented at 8,837 feet.

COMPLETIONS ON TEXAS COAST

Brazoria County

Hastings field: Humble Oil & Refining Co. No. 1 R. B. Masterson, sand 6,095-6,103 feet, 235 bbls.; Humble Oil & Refining Co.-Navarro Oil Co. No. 2-E W. F. Beers, sand 6,084-89 feet, 544 bbls.; Stanolind Oil & Gas Co. No. 17 Drake, perforated casing 6,032-72 feet, 394 bbls.; Stanolind Oil & Gas Co. No. 1 J. J. Miller, sand 6,050-94 feet, 510 bbls.; Stanolind Oil & Gas Co. No. 18 Steve Paul, sand 5,600-5,870 feet, 387 bbls. in 15 hours; Stanolind Oil & Gas Co. No. 1 Peter McDonald, sand 6,005-80 feet, 620 bbls. Lockridge field: Gulf Oil Corp. No. 4 K. M. Gibson, sand 6,357-68 feet, 148 bbls. in 12 hours, 5/32-inch choke. Manvel field: S. E. Wilson No. 1 R. M. Frane, sand 4,019-76 feet, 358 bbls., pumping. West Columbia field: Sterling Oil & Refining Co. No. 2 Munson, sand 5,361-5,455 feet, 566 bbls. Flowing wells were on quarter-inch chokes unless otherwise noted.

Fort Bend County

Blue Ridge field: Texas Gulf Producing Co. No. 18 Bassett-Blakely, 4,606 feet, abandoned.

Galveston County

Dickinson field: Atlantic Refining Co. No. 1 Strong, perforated casing 8,086-92 feet, 540 bbls., ¼-inch choke.

Harris County

Fairbanks field: E. L. Smith and Ownby Drilling Co. No. 3 L. M. Meyers, perforated casing 6,842-48 feet, 312 bbls., ⅞-inch choke. Tomball field: Humble Oil & Refining Co. No. 4-A Kobb, perforated casing 5,567-71 feet, 478 bbls., quarter-inch choke; Humble Oil & Refining Co. No. 4-A W. M. Martins, perforated casing 5,578-93 feet, gas well; Shell Petroleum Corp. No. 2 Stehly, perforated casing 5,551-63 feet, 650 bbls., ¼-inch choke.

Jefferson County

Amelia field: Humble Oil & Refining Co. No. 1-D Tyrell-Combest, sand 6,776-80 feet, 376 bbls., ⅞-inch choke; Glenn H. McCarthy No. 8-A Longe, sand 5,880-92 feet, 97 bbls., ½-inch choke.

Liberty County

Hardin field: Gulf Oil Corp. No. 2-A Barfield, perforated casing 7,618-28 feet, 455 bbls., ¼-inch choke. Atlantic Refining Co. No. 2 A. E. Cessna, perforated casing 7,613-17 feet, 504 bbls., ¼-inch choke.

Matagorda County

McCrosky field: Pierce Estate No. 3 fee, 7,119 feet, abandoned.

Orange County

Orange field: C. L. Brown No. 1 Lutcher-Moore, sand 5,958-89 feet, 677 bbls., ¼-inch choke.

Polk County

Segno field: Humble Oil & Refining Co. No. 3-B Kirby Lumber Co., sand 5,188-98 feet, 17 bbls. per hour, ¼-inch choke.

Wharton County

Five Corners field: Texas Co. No. 17-B Pierce estate, sand 5,540-51 feet, gas well. Withers field: Smith and McDannald No. 1 Britton, sand 5,532½-48 feet, 79 bbls., ⅛-inch choke; Texas Co. No. 47-C Pierce estate, sand 5,545-51 feet, 324 bbls., 12/64-inch choke. Pickett Ridge field: Peyton Brothers No. 1 L. Kainer, perforated casing 4,563-71 feet, 68 bbls., ⅛-inch choke.

Eastern Field Report

By STAFF CORRESPONDENT

Licking County's Good Well; West Virginia Deep Gassers

PITTSBURGH, Pa., May 16.—Another deep test in Wood County, West Virginia, is starting with considerable interest. In Lubeck district, about six years ago, W. H. Bickel drilled a test on his own property to 4,385 feet, through the Brown shale, and found only small showings of gas. Last year this operator drilled a test on the Reese Blizzard farm, south of South Parkersburg in Tygart district, Wood County, through the Oriskany sand, which had an oil showing at the bottom of the Corniferous lime and some gas in the Oriskany. The sand was of sufficient porosity yet the test was not commercial. This sand condition suggested possibilities in the former Lubeck district test and this operator has now ordered 5-inch casing to be run in that test to bottom which is presumed to be in the Corniferous lime and the hole will be deepened to the Oriskany.

The Bickel property in Lubeck district is 2½ miles northeast of Lubeck on the south side of Neal Run and on the east side of a small branch 1.8 miles southwest of the mouth of Little Kanawha River. On the Belleville Quadrange it is 4.1 miles east of longitude 81 degrees 40 minutes and 5.5 miles north of latitude 39 degrees 10 minutes.

The principal formations in this test, which had an approximate elevation of 690 feet, are Boulder sand, 874-884 feet; Second Cow Run, 1,140-75 feet; Berea, 1,938-40 feet, with a show of gas at 1,938 feet; Gordon, 2,260-66 feet; Brown shale, 3,280-3,490 feet; lime, 4,330-85 feet, or bottom. The casing record is 12½-inch conductor, 192 feet 10-inch, 915 feet 8¼-inch, 1,692 feet 6⅝-inch.

Seventeen operations were completed in the lower eastern fields during the week, of which two were dry, eight gas wells, and seven producers with a daily initial of 213 bbls., most of which was accounted for by one well in Ohio.

SOUTHEAST OHIO

In Licking County, Ohio, J. P. Gordon and others completed No. 3 Thomas Moran, section 13, Fallsbury Township, in Clinton sand at 3,082 feet. It produced 170 bbls. the first day after shot.

In Belmont County, Richland Development Co. completed No. 13 John R. Lochary, section 25, Richland Township, in Maxton sand at 1,237 feet. It gauged 200,000 feet of gas per day.

In Knox County, Guy Dugan and others on the George Hook farm in Clay Township drilled into Berea sand to 745 feet. It is estimated good for 5 bbls. a day after shot.

In Morgan County, Gas Producing Co. of Ohio completed a deep test on the William Rambo farm in section 22, York Township, in Clinton sand at 3,706 feet. It has a volume of 750,000 feet of gas a day, with a showing of oil, and will be shot later.

In Trumbull County, Norwood P. Johnston and others reached 3,742 feet on the G. M. Porter farm west of the cross roads at Mecca in Mecca Township, carrying about 8 bailers of water in two hours.

In Coshocton County, Wittmer Oil & Gas Properties has reached 3,730 feet on the S. P. Balder farm, Lot 30, northeast quarter of Crawford Township. The Newburg was drilled through at 3,580 feet, with some water in the hole.

SOUTHWEST PENNSYLVANIA

In Center Township, Greene County, Pennsylvania, Carnegie Natural Gas Co. completed No. 3 J. H. Orndoff at 3,307 feet. It had Fifth sand at 3,292 feet, with 31,000 feet of gas at 3,263 feet; 60,000 feet of gas at 3,296 feet; oil showing at 3,301½ feet, and about 20 bbls. of oil per day at 3,307 feet.

In Allegheny County, South Penn Oil Co. completed a test on the Jane Ryan farm in Penn Township at 1,965 feet, the Hundred-Foot sand, and it is showing for 2 bbls. a day.

In Washington County, R. M. Duden and others deepened a well on the P. L. Parks farm to 2,671 feet. The Fifth sand was topped at 2,653 feet, with oil at 2,664-66 feet, estimated at 10 bbls. a day.

Beaver County

In Beaver County, R. B. Abrams on the Earl Crooks farm in Green Township drilled through the Berea sand and it was dry. In this township, the Oak Oil & Gas Co. is drilling below 700 feet in No. 4 Mary M. Martley.

In Allegheny County, T. W. Phillips Gas & Oil Co. is down 1,500 feet in No. 2 Grimm Coal Co., in Patton Township. Rodgers Development Co. has reached 1,100 feet in the Grace W. Wolf No. 3 in Harmar Township.

In Indiana County, the Equitable Gas Co. made a location on the J. B. Potts farm in Washington Township, and another on the T. G. Armstrong farm in South Mahoning Township.

Greene County

In Greene County, Carnegie Natural Gas Co. is drilling at 1,002 feet, deepening No. 2 Sadie A. Connor in Washington Township. Peoples Natural Gas Co. had reached 2,965 feet, deepening the Eva M. Simmons test, same township.

Near Mt. Morris, the Gartland Oil Co. is drilling at 1,967 feet deepening No. 1 J. L. Lemley. Fred Garrison is down 2,320 feet on the Stoneking farm, Monongahela Township. J. B. Orndoff is drilling by tools lost at 1,530 feet in No. 2 G. M. Scott, Center Township. Union Gasoline & Oil Co. started drilling No. 2 Mabel Bodley.

Equitable Gas Co. is drilling at 2,773 feet in No. 1 John Morris, Whiteley Township; at 2,428 feet in No. 1 C. T. Conklin, Center Township; at 2,123 feet, in No. 1 Jesse Lapping, Franklin Township; and bailing water at 1,400 feet in No. 1 C. S. Orndoff, Jackson Township.

Washington County

In North Strabane Township, Washington County, Penn Ohio Oil & Gas Co. made a location on the William Davis farm. Beedle & Debone are drilling at 1,565 feet on the John Arblaster farm with Salt sand at 1,340-1,424 feet, and 5 bailers of water at 1,385 feet.

In South Franklin Township, F. K. Fawcett and others topped Little Dunkard sand at 886 feet in the Jason Buchanan farm and at 930 feet oil filled up the hole 120 feet in 24 hours, and the sand is being tested. In Donegal Township, Heidlemeir and others are down 785 feet on the James McMurray farm. In Morris Township, Union Gasoline & Oil Corp. has reached 1,408 feet in No. 4 W. E. Craft. In Amwell Township, this company has rigged up No. 814 Leroy Vankirk.

Deep Tests

In Westmoreland County, Peoples Natural Gas Co. is drilling on the John S. Marshall farm on the Grapeville anticline in Penn Township at 5,460 feet.

In Allegheny County, South Penn Oil Co. and others reached 3,700 feet in the rotary test on the Fred Backhaus farm on the Kellersburg anticline, West Deer Township, and shut down for repairs.

On Chestnut Ridge, the Greensboro Gas Co. is drilling at 5,560 feet on the J. R. Thompson farm in Wharton Township. In North Union Township, Wasson & Co. are underreaming to 2,387 feet to lower casing on the J. H. Sorg farm. In Springhill Township, the L. J. Houze Convex Glass Co. is down 1,983 feet on the Paul Dunham farm north of Wymps Gap.

WEST VIRGINIA

In Ritchie County, West Virginia, J. W. Roland completed the test on the M. D. Barnett heirs in Grant district in the Maxton sand at 1,642 feet and it is showing for 5 bbls. a day. In this district, the test of Anderson & Smith on the Thomas Maloy heirs was dry in the Injun sand at 2,230 feet and abandoned.

In Tyler County, the Rae Oil Co. completed No. 2 Ralph Brooks in Union district in the Cow Run sand at 752 feet and it will make a half-barrel pumper.

In Wetzel County, Lomie Oil & Gas Trust in 1931 completed a gas well on the Lomie Hunt farm in Church district in the Gordon sand at 3,100 feet. The gas has decreased to 10,000 feet a day but it has now started making about one-eighth barrel a day and is being tested.

Gas Wells

In Cabell County, Burnie Curry completed a gas well on the Clyde McKendry farm in McComas district in the top of Corniferous lime at 3,725 feet. It gauges 94,000 feet a day. In this district W. C. Kingery and others deepened No. 2 Millard Pratt heirs from 1,314 feet to 3,048 feet. Berea sand at 1,881-99 feet and Brown shale at 2,694-3,030 feet produced 280,000 feet a day.

In Lewis County, Carnegie Natural Gas Co. completed a gasser on the Baxter Rohr farm in Freemans Creek district in the Gantz sand at 2,310 feet. It gauged 250,000 feet a day.

In Monongalia County, the Pittsburgh & West Virginia Gas Co. completed No. 5,411 on the Della Lemley land in Clay district at 3,156 feet. Fifth sand was topped at 2,955 feet with a gauge of 240,000 feet a day.

Oriskany Field

In the Oriskany field in Kanawha County, United Carbon Co. completed the test on the James S. Fisher farm in the Poca district at 4,806 feet, with the Oriskany topped at 4,787 feet and a final gauge of 8,974,000 feet a day.

In this district, South Penn Oil Co. completed No. 3 S. S. Beane at 5,089 feet with the top of the Oriskany at 5,074 feet and a final gauge of 10,000,000 feet a day.

Three new locations were made in this district: Columbian Carbon Co. on the L. P. Rollins farm, elevation 919 feet; United Fuel Gas Co. on the Lillie Dawson farm; and Geary and Morley Gas Co. on the Dianah J. Milan heirs farm. In this district, United Carbon Co. was drilling at 500 feet in the Louisa E. Long test; United Fuel Gas Co., drilling at 1,268 feet in No. 4,787 W. J. Glass and others; drilling at 4,025 feet in No. 4,790 W. H. Sisson; at 375 feet in No. 4,693 W. A. Fisher and others.

Guy B. Ray was drilling at 1,595 feet in the Emmett Thaxton test; Mullins Gas Co. at 1,800 feet in the Esta Fisher Bonham test; Joe Rubin at 2,510 feet on the Carney heirs farm; Liosag Fuel Co. at 3,125 feet on the H. C. Matthews farm; D. H. Stephenson Co. at 3,000 feet on the Rozella Shamblin and others land; Columbian Carbon Co. at 1,606 feet on the Boyd Castro farm, and at 900 feet on the Johnson, Gibson and others land. In Union district, this company is down 4,370 feet in the Nelson H. Cavender test. The West Virginia Gas Corp. resumed drilling and reached 2,345 feet on J. E. Layne and others land.

In Elk district, the Columbian Carbon Co. is drilling at 2,320 feet in the B. F. Jones test; topped Corniferous lime at 4,865 feet in the Margaret Rayhill and others test and is drilling at 4,874 feet. Cameron Oil & Gas Co. reached 4,000 feet in the test on the Henry Hansel farm and shut down.

Deep Tests

In Jackson County, Potter Development Co. is drilling at 3,800 feet on the William T. Chancey farm in Ripley district.

In Wood County, the Belmont Quadrangle Co. is drilling at 3,200 feet on the C. D. White farm in Steel district. In Harris district, Potter Development Co. is drilling at 3,200 feet on the W. H. Orem farm.

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario, May 14. — Effective May 5, Royalite Oil Co. increased the proration rate of crude from the Turner Valley field from 42 per cent to 44 per cent of potentials. This increased allowable production of the field from 13,819 bbls. to around 14,080 bbls. a day. The restriction to six days' production per week remains unchanged.

The new Royalite 6-inch pipe line from Turner Valley to Calgary has been completed and placed in operation. While it increases transportation capacity from 13,000 to 24,000 bbls. a day, considerable crude accumulated in storage will have to be cleared before any further increase in allowables is announced; and such increases from time to time will also depend upon the performance of new producers and state of the crude market. Field storage, amounting to around 150,000 bbls., was pretty well taxed before the new line was completed. Deliveries to the British American Oil Co. in April totaled 115,842 bbls. of crude and 552 bbls. of naphtha.

The new potential of West Flank Oil Co. No. 1, LSD 1, section 32-18-2w5, has been set at 311 bbls. a day.

Deepen South End Producer

In the south end of the field, National Petroleum Corp. No. 2, LSD 14, section 9-18-2w5, discontinued drilling at 7,560 feet, some 490 feet in the Madison limestone. The well blew in, throwing oil over the derrick. Gas was estimated between 6,000,000 and 8,000,000 feet a day. The flare at times burned 200 feet high, with indications of an exceptionally large well. It was decided to deepen the well several hundred feet. Analysis of samples from 7,559 feet indicated that neither the black lime horizon nor the main porous horizon of the Madison had been found, the last samples indicating the barren crystalline zone usually found just above the lower porous section. About a week's drilling will be required.

National Petroleum No. 2 extends the proven field approximately 1 mile south.

Tests in the Lime

In section 17-18-2w5, Sundance Royalties No. 1, LSD 9, is below 7,065 feet after getting the Madison limestone at 6,942 feet. It is expected to be the next completion in the southwest extension to the field.

In section 29-18-2w5, Model-Spooner-Reward No. 2, S half LSD 1, is below 6,783 feet after getting the Madison limestone at 6,734 feet.

West Side Drilling

In West Central Turner Valley, Vulcan-Brown Petroleums No. 1, LSD 10, section 5-19-2w5, is below 6,634 feet. Mercury Royalties No. 1, LSD 8, same section, is making new hole below 5,263 feet after sidetracking. Royalite Oil Co. No. 33, LSD 2, offsetting Royalite No. 28 producer to the north, is below 371 feet.

In section 6-19-2w5, East Crest Oil Co. No. 4, LSD 8, is below 1,850 feet after encountering the coal marker in the Belly River formation.

In section 32-18-2w5, Royalite Oil Co. No. 30, LSD 11, is below 7,200 feet and getting close to the Madison limestone. Davies Petroleums No. 4, LSD 10, is spudding.

In section 29-18-2w5, P. & H. Development Co. No. 1 Alco, LSD 13, is below 100 feet. Globe Royalties No. 1, LSD 7, is in the Dalhousie sand below 6,690 feet and expected to get the Madison lime around 6,900 feet. In section 21-18-2w5, Barsac Royalties No. 1, LSD 12, is below 6,318 feet. In section 20-18-2w5, Consolidated Royalties No. 1, LSD 14, is below 4,618 feet. United-Brown Petroleums No. 5, LSD 1, is below 6,574 feet.

In section 17-18-2w5, Coronation Royalties No. 1, LSD 10, is below 6,136 feet.

In section 16-18-2w5, Frontier Royalties No. 1, LSD 11, is below 6,104 feet. Okalta No. 8, LSD 6, is standing with 16-inch casing cemented around 1,250 feet. Brown Oil Corp. No. 5, LSD 12, has spudded, offsetting Firestone Royalties No. 1 producer to the south.

In section 9-18-2w5, Marine Petroleums No. 1, LSD 11, is below 280 feet. Rex Petroleums No. 1, LSD 9, offsetting National Petroleum Corp. No. 2 producer to the southeast, is rigging cable tools.

In section 5-18-2w5, Theo. Grewer and associates No. 1, LSD 14, is below 210 feet. P. & H. Development Co. No. 1 C. & E., LSD 7, is below 105 feet.

In section 33-17-2w5, Davies Petroleums No. 3, LSD 7, has resumed from 3,180 feet after running 10-inch casing.

In section 16-17-2w5, Firth Petroleum No. 1, LSD 6, is below 250 feet.

North Turner Valley

In North Turner Valley, Phillips Royalties No. 1, LSD 16, section 16-20-3w5, is below 4,923 feet after getting the cardium sandstone at 4,690 feet. This is logging quite closely with some of the recent crude producers on the west flank of South Turner Valley.

Home Oil Co. No. 2 Millarville, LSD 6, section 33-20-3w5, is below 1,160 feet.

New Tests Starting

In section 32-18-2w5, British Colonial Oils No. 1, LSD 5, is below 250 feet, using cable tools with heavy-duty combination steel derrick. It is a 3,500-foot test. Location is northwest of West Turner Petroleums No. 1 producer, and about a mile due west of Sterling Pacific No. 5. In the same section, Vantage Oils, Ltd., headed by J. J. Coughlin will drill its No. 1 test on acreage of Roxana Petroleums in S half LSD 12, north of British Colonial No. 1. Roxana Petroleums will hold a 20 per cent interest.

In section 29-18-2w5, Command Oils, Ltd., headed by D. J. Young of Calgary, has arranged for completion of its No. 1 in LSD 14, standing since last fall at 810 feet. Work will start early in June.

On the New Valley structure, northeast of Turner Valley, McLeod Oil Co. No. 1, LSD 4, section 6-21-2w5, is bailing crude and overhauling equipment preparatory to deepening from 8,462 feet. Crude, standing 1,800 feet in the hole when it was reopened, was a seepage from the cardium sandstone. It will probably take production while deepening.

In the Pouce Coupe area, west of Peace River, Guardian Oil Co. No. 1, section 7-80-12w6, has derrick up and is moving in rotary equipment. Test will spud toward the end of May. Location is at Bonanza, Alberta, not far from the British Columbia boundary. John Lund will handle the drilling contract.

On the Brazeau structure, west of Edmonton, Home Oil Co. No. 1 Brazeau, LSD 16, section 7-43-17w5, is below 3,650 feet.

On the Kootenay dome, 40 miles west of Calgary, Roxana Petroleums, section 8-24-7w5, has resumed from 3,790 feet. At this depth the test, shut down last fall, was 685 feet in the Devonian limestone, with some small shows of gas. It is expected to get production in the Lower Devonian.

Okalta Structure

On the Okalta structure, west of Turner Valley, Okalta Oil Co. No. 6, LSD 3, section 30-18-2w5, is below 7,270 feet.

Ontario Operations

In the Dover field, Kent County, Ontario, Prairie Oil & Gas Co. No. 6, Orville Crow farm, Lot 6, Front Concession, Raleigh Township, got the granite at 3,700 feet after drilling through the Trenton limestone and Potsdam sand without a show. While pulling casing preparatory to abandoning and plugging, the derrick collapsed.

In Camden Township, Kent County, Andrew Wolsey has finished a shallow well for George Willetts of Bothwell on the Van Horne lease 2¾ miles southwest of Thamesville. It is reported a fair pumper. In Harwich Township, on the River Road 2 miles east of Chatham, an oil show encountered at shallow depth in a structure test by Olga Gas Co. and E. P. Rowe was acidized and may develop a small pumping production.

Regular shipments of Turner Valley crude by tankcar are being made to the Central refinery at Brandon, Manitoba, operated by the Anglo-Canadian Oil Co.

Stover & Rawlings, drilling contractors, are erecting a new office, warehouse and shop building on Beatty Street, Chatham.

Morley Balcom, of Vienna, field man for the Central Pipe Line Co., died recently, aged 32.

Reginald Heber Spurr, former manager of Imperial Oil, Ltd., at St. John's, Newfoundland, died at Toronto recently, aged 61.

At the annual meeting of Imperial Oil, Ltd., the following directors were reelected: G. Harrison Smith, president; R. V. LeSueur, C. A. Eames, L. C. McCloskey, John McNeil, vice presidents; A. E. Halverson, director.

STOCKS HELD IN PACIFIC COAST TERRITORY BY CALIFORNIA OIL COMPANIES

	Feb. 28, 1938	Jan. 31, 1938	Feb. changes	Dec. 31, 1937* reclassified
1 Fuel oil residuum and non-gasoline-bearing crude	74,428,663	71,758,162	+2,670,501	68,529,388
2 Gas oil and diesel oil	9,103,824	8,865,191	+ 238,633	8,648,990
3 Gasoline-bearing crude	31,104,054	29,393,330	+1,710,724	29,417,842
tributing and service sta.)	15,134,960	14,443,190	+ 691,770	13,520,678
5 Gasoline (not including distributing and service sta.)	15,134,960	14,443,190	+ 691,779	13,520,678
6 Naphtha distillates	a1,587,174	a1,333,075	+ 254,099	a1,464,577
7 All other stocks	b4,778,383	b4,769,380	+ 9,003	b4,457,568
Total	138,527,134	132,683,753	+5,843,381	128,040,247
aEstimated amount of unfinished gasoline contained in item No. 6	1,389,001	1,160,639		1,248,291
bCoke included in item No. 7	22,142	22,190		22,435

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Heeter's Improved Patent Swabs, Corrugated Friction Sockets, Wire Line Pumping Outfits, Sand Pumps and other Gas and Oil Well Materials.

Mid-Continent Refinery Runs

(Continued from Page 75)

Company and location—	Daily capacity	Av. dly. runs May	Av. dly. runs April
Midway Ref. Co., Goldsboro	300	90	90
North Texas Ref. Co., Gainesville	600	300	300
Ohio Oil Co., Fort Worth	5,000	3,970	3,300
Olney Oil & Ref. Co., North Olney	3,000	500	(*)
Panhandle Ref. Co., Wichita Falls	4,200	2,650	2,500
Panhandle Ref. Co., Lueders	1,500	1,000	1,000
Sinclair Ref. Co., Fort Worth	4,000	2,700	2,700
Southland Ref. Co., Olney	500	50	30
Taylor Ref. Co., Taylor	1,000	800	800
Texas Pacific Coal & Oil Co., Caddo	800	500	500
Tucker Oil Co., Burkburnett	400	185	250
Tydal Ref. Co., Gainesville	1,850	1,100	1,400
Wagoner Ref. Co., Electra	4,000	3,000	3,000
Total	61,950	38,185	37,030

*Shut down.

NORTH LOUISIANA

Company and location—	Daily capacity	Av. dly. runs May	Av. dly. runs April
Arkansas Fuel Oil Co., Bossier City	25,000	18,000	19,000
Atlas Pipe Line Co., Shreveport	12,500	9,000	9,000
Bayou State Oil Corp., Hosston	750	500	500
Co-Service Oils, Inc., Princeton	750	200	(†)
East Texas Ref. Co., Sandra	7,000	(*)	4,500
Premier Oil Ref. Co. of Texas, Cotton Valley	3,000	2,000	2,000
Rodessa Oil & Ref. Corp., Cedar Grove	12,000	10,000	8,300
Shoreline Oil Co., Lewis	5,000	(*)	2,000
Stanolind Oil & Gas Co., Superior	5,000	3,500	3,500
Total	71,000	43,200	48,800

*Shut down. †Building.

OKLAHOMA

Company and location—	Daily capacity	Av. dly. runs May	Av. dly. runs April
Anderson-Prichard Ref. Corp., Cyril	7,500	6,000	6,000
Barnsdall Ref. Co., Barnsdall	5,000	(*)	3,300
Barnsdall Ref. Co., Okmulgee	7,500	(*)	(*)
Bell Oil & Gas Co., Grandfield	5,000	3,000	3,100
Black Gold Ref. Co., Oklahoma City	2,500	800	900
Champlin Ref. Co., Enid	16,000	12,000	12,000
Cities Service Oil Co., Okmulgee	4,000	2,260	2,300
Cities Service Oil Co., Ponca City	12,000	8,060	7,300
Continental Oil Co., Ponca City	26,000	24,000	20,500
Cosco Oil Co., Wynnewood	2,500	2,000	1,500
Cushing Ref. & Gasoline Co., Blackwell	1,700	(*)	(*)
Cushing Ref. & Gasoline Co., Cushing	4,200	3,500	3,500
Deep Rock Oil Corp., Cushing	10,000	9,000	9,000
Eason Oil Co., Enid	3,000	2,000	(*)
Globe Oil & Ref. Co., Blackwell	8,000	(*)	(*)
Johnson Oil Ref. Co., Cleveland	6,000	4,000	4,000
Knox Ref. Co., Covington	300	100	100
Mid-Continent Pet. Corp., West Tulsa	35,000	18,000	18,700
Ohio Oil Co., Bristow	5,000	2,570	2,800
Omar Ref. Co., Garber	5,000	2,100	2,100
Peppers Gasoline Co., Oklahoma City	500	400	400
Phillips Pet. Co., Okmulgee	6,500	5,160	5,330
Pure Oil Co., Muskogee	9,000	3,000	(*)
Rock Island Ref. Co., Beckett	6,500	5,000	5,000
Sinclair Ref. Co., Sand Springs	6,000	4,000	4,000
Sooner State Ref. Co., Oklahoma City	700	(*)	(*)
Sun Oil Co., Yale	5,000	2,000	2,000
Sunray Oil Co., Allen	7,000	3,200	3,300
Texas Co., West Tulsa	16,000	9,500	9,200
Tide Water Oil Co., Drumright	12,000	11,500	11,500
Wilcox Oil & Gas Co., Bristow	6,000	2,420	1,200
Total	241,400	145,570	139,030

*Shut down.

SOUTHWEST TEXAS

Company and location—	Daily capacity	Av. dly. runs May	Av. dly. runs April
Carle Ref. Co., Inc., San Antonio	1,000	(*)	(*)
Eggleston Oil Products Co., Three Rivers	1,800	800	1,000
Humble Oil & Ref. Co., San Antonio	5,000	3,000	3,000
Ina Oil & Ref. Co., Hondo	400	(*)	(*)
Magnolia Pet. Co., Luling	8,000	4,090	5,150
Misko Refineries, Inc., Mirando City	4,500	(*)	(*)
Pettus Oil & Ref. Co., Pettus	1,000	800	800
Phoenix Ref. Co., San Antonio	1,200	700	700
Phoenix Ref. Co., Pettus	900	400	400
Pioneer Oil & Ref. Co., Somerset	2,000	750	775
Rado Ref. & Prod. Co., McAllen	800	700	700
Texas Co., San Antonio	5,000	2,400	2,400
White Wing Ref. Co., Sullivan City	1,000	400	400
Total	32,600	14,040	15,325

*Shut down.

WEST TEXAS AND PANHANDLE

Company and location—	Daily capacity	Av. dly. runs May	Av. dly. runs April
Aero Gas & Ref. Co., Fort Stockton	350	100	100
Coltex Ref. Co., Colorado	12,500	8,000	8,000
Concho Ref. Co., San Angelo	250	70	70
Cosden Oil Co., Big Spring	15,000	8,000	8,500
Danciger Refs., Inc., Pampa	6,500	4,500	4,000
Danube Oil Corp., Borger	1,000	800	200
Farmers Ref., The, Lubbock	500	200	200
Gulf Oil Corp., Sweetwater	7,000	5,600	6,800
Howard County Ref. Co., Big Spring	2,000	1,500	1,000
Moutray Oil Co., Hawley	1,400	750	925
Onyx Ref. Corp., Hawley	3,000	1,500	1,500
Panhandle Ref. Co., Kings Mill	2,500	1,900	1,700
Payward Ref. Co., Shamrock	600	600	600
Phillips Pet. Co., Borger	35,000	24,200	25,000
Post Refining Co., Rotan	800	650	650
Shamrock Oil & Gas Corp., Sunray	3,000	1,800	1,800
Shamrock Oil & Gas Corp., Lefors	1,600	1,200	1,200
Standard Oil Co. of Texas, El Paso	14,000	9,000	9,200
Stamford Ref. Co., Stamford	450	400	370
Star Light Ref. Co., Ballinger	1,000	150	150
Texas Co., El Paso	2,000	1,300	1,300
Texas Co., Amarillo	6,000	3,200	3,200
West Texas Ref. Co., Pecos	500	(*)	(*)
Western Ref. Co., Fort Stockton	1,000	100	100
Wickett Pet. Co., Wickett	3,500	1,800	2,000
Total	121,850	77,320	77,565

*Shut down.

California Oil Field Operations for February, 1938

According to figures collected by the American Petroleum Institute, the total production of crude oil in California for February amounted to 20,607,735 bbls., an average of 735,991 bbls. per day. This is an increase of 26,048 bbls. per day over January production.

Total stocks of crude and all products in Pacific Coast territory increased during the month 5,843,381 bbls. The total stocks at the end of the month were 138,527,134 bbls. The total stock increase for 1938, up to February 28, was 10,486,887 bbls.

Seventy wells were completed during the month with an initial daily production of 78,461 bbls., compared with 119 wells completed during January with an initial production of 85,446 bbls.

OIL FIELD DEVELOPMENTS

	New rigs up	Active drilling	Producers comp.	Daily initial output	Active producing	Abd. wells Drillers	Abd. wells Producers
Group No. 1:							
Belridge—North	4	9	2	1,718	56	0	0
Belridge—South	0	0	0	0	130	0	0
Canal	3	2	2	4,392	3	0	0
Canfield Ranch	0	0	0	0	1	0	0
Coalinga	2	3	0	0	909	0	4
Edison	1	2	0	0	88	0	1
Elk Hills	0	0	1	10	172	0	0
Fruitvale	0	1	3	709	164	0	0
Greeley	2	8	0	0	12	0	0
Kern River	2	3	1	6	1,352	0	0
Kettleman Middle dome	0	1	0	0	3	0	0
Kettleman North dome	2	13	2	2,454	187	0	0
Lost Hills	2	3	0	0	220	0	0
McKittrick	0	2	0	0	214	0	0
Midway-Sunset	3	8	4	456	2,542	0	4
Mountain View	0	1	0	0	193	0	2
Mount Poso	7	4	1	298	277	1	0
Rio Bravo	1	7	0	0	1	0	0
Round Mountain	3	6	1	300	174	0	0
Ten Secton	2	4	3	5,196	13	0	0
Wheeler Ridge	1	0	0	0	26	0	0
Group No. 2:							
Capitan	0	0	0	0	44	0	0
Elwood	0	0	0	0	63	0	0
Rincon	0	2	0	0	39	0	0
San Miguelito	0	0	1	161	16	0	0
Santa Barbara	0	0	0	0	36	0	0
Santa Maria	10	22	8	11,914	290	0	0
Summerland	0	0	0	0	18	0	0
Ventura Avenue	4	8	0	0	249	0	0
Ventura-Newhall	1	4	2	651	554	0	0
Watsonville	0	0	0	0	7	0	0
Group No. 3:							
Brea-Olinda	0	1	0	0	355	1	0
Coyote—East	0	0	0	0	88	0	0
Coyote—West	0	0	0	0	47	0	0
Dominguez	1	3	2	522	178	0	1
El Segundo	0	3	4	3,130	62	0	0
Huntington Beach	1	1	0	0	559	0	0
Inglewood	0	0	1	267	199	0	0
Lawndale	0	0	0	0	6	0	0
Long Beach	4	7	4	376	1,242	0	1
Los Angeles-Salt Lake	0	0	0	0	113	0	0
Montebello	4	5	0	0	209	0	0
Playa Del Rey	0	0	0	0	200	0	1
Potrero	0	0	0	0	11	0	0
Richfield	3	4	3	167	301	0	0
Rosecrans	0	3	2	1,017	89	0	0
Santa Fe Springs	0	1	0	0	656	0	0
Seal Beach	0	0	1	194	110	0	1
Torrance	0	13	1	180	510	0	2
Whittier	0	0	0	0	143	0	0
Wilmington	47	44	20	44,343	402	0	0
Miscellaneous drilling	8	40	0	0	0	15	0
Group No. 4—gas fields:							
Buena Vista Lake	0	1	0	0	5	0	0
Buttonwillow	0	0	0	0	21	0	0
Chowchilla	0	0	0	0	0	0	0
Delano	0	0	0	0	1	0	0
Dudley Ridge	0	0	0	0	0	0	0
Goleta	0	0	0	0	1	0	0
McDonald Island	0	1	0	0	4	0	0
Rio Vista	1	1	1	gas	14	0	0
Semi-Tropic	0	1	0	0	20	0	0
Tracy	0	0	0	0	6	0	0
Total February	121	242	70	78,461	13,605	17	17
Total January	127	233	119	85,446	13,544	35	20
Decrease (*Increase)	6	*9	49	6,985	*61	18	3

CRUDE PETROLEUM PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

	Total production February	Daily average Feb., 1938	Daily average Jan., 1938	Daily average Feb., 1937
Group No. 1—				
Belridge—North	423,447	15,123	15,581	14,897
Belridge—South	45,319	1,618	1,552	1,845
Canal	36,684	1,310	465	....
Canfield Ranch	3,473	124	20	....
Coalinga	312,146	11,148	14,891	15,040
Edison	103,828	3,708	3,659	4,878
Elk Hills	309,340	11,048	10,936	8,828
Fruitvale	260,672	9,310	9,639	8,924
Greeley	102,926	3,676	3,680	445
Kern River	412,124	14,719	14,772	15,237
Kettleman Middle dome	2,253	80	83	184
Kettleman North dome	2,251,647	80,416	81,352	77,612
Lost Hills	103,476	3,696	3,638	3,922
McKittrick	120,889	4,318	4,252	1,677
Midway-Sunset	2,083,034	74,394	75,492	67,858
Mountain View	378,323	13,512	13,968	21,125
Mount Poso	572,964	20,463	20,384	17,795
Rio Bravo	46,827	1,672	2,582	....
Round Mountain	485,524	17,340	18,201	11,434
Ten Section	128,178	4,578	3,887	1,163
Wheeler Ridge	8,757	313	313	333
Group No. 2—				
Capitan	84,626	3,022	3,095	1,614
Elwood	215,509	7,697	7,664	9,368
Rincon	100,896	3,604	3,189	2,508
San Miguelito	116,401	4,157	4,065	2,610
Santa Barbara	14,065	502	523	1,001
Santa Maria	437,036	15,608	15,850	5,510
Summerland	911	32	32	38
Ventura Avenue	1,035,687	36,989	36,337	33,392
Ventura-Newhall	155,020	5,537	5,277	4,830
Watsonville	1,400	50	60	60
Group No. 3—				
Brea-Olinda	175,533	6,269	6,151	8,068
Coyote—East	111,725	3,990	4,053	3,238
Coyote—West	226,672	8,095	9,465	7,439
Dominguez	821,012	29,322	30,192	24,632
El Segundo	467,914	16,711	19,450	1,990
Huntington Beach	973,248	34,759	34,511	36,425
Inglewood	448,461	16,016	16,046	13,405
Lawndale	2,520	90	97	91
Long Beach	1,611,387	57,550	57,040	62,240
Los Angeles-Salt Lake	15,295	546	575	832
Montebello	238,862	8,531	8,225	9,783
Playa Del Rey	200,813	7,172	7,311	10,371
Potrero	11,105	397	381	282
Richfield	278,368	9,942	9,771	7,762
Rosecrans	178,139	6,362	5,558	2,223
Santa Fe Springs	1,136,333	40,583	40,666	44,040
Seal Beach	274,245	9,794	9,542	9,312
Torrance	224,350	8,013	7,704	7,971
Whittier	25,808	922	896	945
Wilmington	2,832,563	101,163	66,870	4,660
Total February	20,607,735	735,991	709,943	589,837
Total January	22,008,235	709,943		
Increase (*Decrease)	*1,400,500	26,048		

Summary of Operations in All Fields, April

SUMMARY OF OPERATIONS

Wells Completed

Field—	Comp.	Prod.	Dry	Gas
Eastern fields	330	473	23	35
Lima	2	0	2	2
Central Ohio	52	186	14	26
Indiana	11	10	7	2
Western Kentucky	53	1,713	19	6
Eastern Kentucky	24	207	2	6
Michigan	84	14,517	32	2
Illinois	99	22,908	20	2
Kansas	128	57,785	35	6
Oklahoma	130	22,628	37	9
N. Central Texas	255	89,440	83	1
West Texas	187	127,546	27	3
Texas Panhandle	28	14,183	1	0
East Texas	185	9,681	4	0
E. Central Texas	25	2,106	12	2
East Texas Border	15	5,215	2	0
Gulf Coast Texas	93	31,011	15	4
Southwest Texas	214	21,572	62	15
Arkansas	26	14,025	8	0
North Louisiana	37	12,795	5	3
Gulf Coast La.	33	6,415	12	2
Mississippi	5	0	5	0
Montana	5	159	0	1
Wyoming	8	5,284	2	0
New Mexico	48	17,678	4	0
Colorado	1	18	0	0
Total Apr.	2,078	477,555	431	127
Total Mar.	2,290	540,931	486	179
Difference	212	63,376	55	52

Rigs and Wells Drilling

Field—	Rigs	Drlg.	Ttl.
Eastern fields	50	270	320
Lima	3	4	7
Central Ohio	48	88	136
Indiana	1	25	26
Western Kentucky	4	46	50
Eastern Kentucky	17	31	48
Michigan	31	141	172
Illinois	24	156	180
Kansas	30	224	254
Oklahoma	37	314	351
North Central Texas	125	413	538
West Texas	106	396	502
Texas Panhandle	36	123	159
East Texas	35	77	112
East Central Texas	19	34	53
East Texas Border	5	24	29
Gulf Coast Texas	19	133	152
Southwest Texas	52	207	259
Arkansas	10	37	47
North Louisiana	30	80	110
Gulf Coast Louisiana	19	97	116
Mississippi	3	4	7
Georgia	0	1	1
Alabama	1	0	1
Florida	1	1	2
Montana	2	54	56
Wyoming	6	72	78
Colorado	2	29	31
Utah	1	7	8
New Mexico	14	158	172
Nebraska	1	6	7
Total Apr.	732	3,252	3,984
Total Mar.	756	3,174	3,930
Difference	24	78	54

OKLAHOMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Atoka	1	0	1	0	0	2
Beckham	0	0	0	0	0	3
Caddo	3	1,133	0	2	0	9
Carter	10	152	2	0	2	15
Cimarron	0	0	0	0	0	1
Choctaw	0	0	0	0	0	2
Cleveland	0	0	0	0	0	2
Coal	0	0	0	0	0	1
Comanche	1	1	0	0	0	4
Creek	6	32	3	0	4	34
Garfield	1	294	0	0	1	2
Garvin	1	15	0	0	1	5
Grady	1	0	1	0	1	2
Grant	0	0	0	0	0	1
Greer	1	0	1	0	0	2
Hughes	4	158	2	0	0	6
Jefferson	0	0	0	0	0	4
Johnston	2	0	2	0	0	0
Kay	1	0	1	0	1	4
Kiowa	1	0	1	0	0	3
Lincoln	5	273	2	1	1	11
Logan	1	0	1	0	0	3
Love	1	0	0	0	0	1
Marshall	0	0	0	0	0	1
Murray	0	0	0	0	0	1
Muskogee	1	0	1	0	1	6
Noble	0	0	0	0	0	3
Okfuskee	3	105	0	1	0	6
Oklahoma	10	6,818	2	1	6	12
Okmulgee	11	188	3	0	1	30
Osage	7	397	1	0	0	23
Pawnee	1	0	0	1	0	5
Payne	4	1,645	3	0	0	7
Pontotoc	9	1,829	1	1	3	25
Pittsburg	1	0	0	1	0	1
Pottawatomie	15	2,964	3	0	3	25
Seminole	22	6,285	4	0	7	24
Stephens	3	33	0	0	3	11
Texas	1	0	0	1	0	2
Tillman	2	306	1	0	0	1
Tulsa	0	0	0	0	1	9
Washita	0	0	0	0	0	1
Wagoner	1	0	1	0	1	4
Ttl. Apr.	130	22,628	37	0	37	314
Ttl. Mar.	144	18,925	48	12	45	314
Difference	14	3,703	11	3	8	0

KANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Barber	5	1,049	2	2	0	3
Barton	22	11,914	4	0	3	24
Butler	4	184	0	0	2	8
Chase	0	0	0	0	0	1
Cowley	4	284	3	0	3	11
Dickinson	0	0	0	0	0	1
Ellis	13	13,800	4	0	2	13
Ellsworth	4	736	0	0	0	4
Finney	0	0	0	0	0	1
Ford	0	0	0	0	0	1
Graham	1	709	0	0	0	0
Grant	1	0	0	1	0	0
Greenwood	2	25	1	0	0	11
Harper	1	0	1	0	0	0
Harvey	1	0	1	0	0	0
Jackson	0	0	0	0	0	1
Jewell	0	0	0	0	0	1
Kearny	1	0	0	1	0	1
Lane	0	0	0	0	0	1
Marion	1	50	0	0	0	1
McPherson	5	1,559	0	0	0	11
Meade	1	0	1	0	0	1
Ness	1	0	1	0	1	5
Pawnee	0	0	0	0	0	1
Pratt	0	0	0	0	0	2
Reno	2	1,196	0	0	2	12
Rice	11	8,334	1	0	3	26
Rooks	1	109	0	0	0	4
Russell	16	8,166	5	0	6	27
Scott	0	0	0	0	0	1
Sedgwick	1	0	1	0	0	3
Stafford	13	8,856	4	0	5	30
Stevens	2	0	0	2	0	3
Sumner	3	584	2	0	0	4
Trego	1	0	1	0	0	1
Woodson	11	230	3	0	3	10
Ttl. Apr.	128	57,785	35	6	30	224
Ttl. Mar.	166	61,384	51	5	39	232
Difference	38	3,599	16	1	9	8

WEST TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Andrews	6	3,020	0	0	4	15
Bailey	0	0	0	0	0	1
Brewster	0	0	0	0	0	3
Cochran	1	173	0	0	1	4
Coke	0	0	0	0	0	2
Crane	10	10,597	3	0	3	12
Crockett	2	114	0	0	2	9
Culberson	0	0	0	0	1	2
Concho	0	0	0	0	0	2
Dawson	0	0	0	0	0	1
Ector	53	57,013	0	0	29	108
Edwards	0	0	0	0	0	3
El Paso	0	0	0	0	0	1
Fisher	5	1,194	2	0	0	5
Gaines	2	2,367	0	0	1	7
Garza	0	0	0	0	0	2
Glasscock	0	0	0	0	1	1
Hockley	1	425	0	0	0	3
Howard	9	6,267	0	0	12	25
Hudspeth	0	0	0	0	0	2
Jeff Davis	0	0	0	0	0	1
Jones	22	6,394	9	0	5	25
Kent	0	0	0	0	2	1
Kimble	0	0	0	0	0	1
Loving	0	0	0	0	3	1
Lynn	0	0	0	0	0	1
Mitchell	1	58	0	0	0	2
Menard	1	0	1	0	0	3
Martin	0	0	0	0	1	0
Nolan	0	0	0	0	0	1
Pecos	10	1,003	2	2	3	30
Presido	0	0	0	0	0	1
Reeves	0	0	0	0	0	2
Runnels	1	0	1	0	0	3
Schleicher	0	0	0	0	0	2
Scurry	1	10	0	0	1	2
Sterling	0	0	0	0	0	2
Stonewall	0	0	0	0	0	2
Sutton	0	0	0	0	0	1
Taylor	2	0	2	0	0	2
Terrell	0	0	0	0	0	1
Terry	0	0	0	0	0	1
Tom Green	1	0	1	0	1	3
Upton	17	8,343	4	0	18	25
Val Verde	0	0	0	0	4	1
Ward	11	12,561	1	0	3	28
Winkler	21	12,566	0	1	8	20
Yoakum	10	5,441	1	0	3	26
Ttl. Apr.	187	127,546	27	3	106	396
Ttl. Mar.	224	158,821	26	1	136	378
Difference	37	31,275	1	2	30	18

NORTH CENTRAL TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Archer	14	3,320	5	0	7	29
Baylor	2	0	2	0	2	1
Brown	4	45	2	0	0	12
Callahan	3	0	3	0	0	7
Clay	19	3,164	5	0	7	11
Coleman	3	0	3	0	2	5
Comanche	0	0	0	0	0	2
Cooke	17	1,012	5	0	5	14
Denton	1	0	1	0	2	3
Eastland	1	0	0	1	3	6
Foard	0	0	0	0	0	3
Grayson	0	0	0	0	0	3
Haskell	0	0	0	0	0	2
Jack	16	1,487	7	0	4	24
Johnson	0	0	0	0	0	1
Knox	1	0	1	0	0	0
Montague	7	555	2	0	0	8
Palo Pinto	1	0	1	0	0	5
Parker	1	0	1	0	0	4
Shackelford	12	836	7	0	1	22
Stephens	2	9	0	0	1	6
Tarrant	0	0	0	0	0	1
Throckmorton	4	0	4	0	0	5
Wichita	100	72,732	11	0	75	185
Wilbarger	9	2,113	5	0	4	12
Wise	0	0	0	0	0	2
Young	38	4,167	18	0	12	40
Ttl. Apr.	255	89,440	83	1	125	413
Ttl. Mar.	276	88,212	95	6	97	340
Difference	21	1,228	12	5	28	73

TEXAS GULF COAST

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Amelia	4	520	1	0	0	3
Anahuac	5	1,999	0	1	0	2
Batson	2	470	0	0	0	1
Bay City	1	139	0	0	0	1
Barbers Hill	0	0	0	0	0	4
Blue Ridge	0	0	0	0	0	1
Big Hill	0	0	0	0	0	1
Boling	1	537	0	0	0	1
Cedar Bayou	1	0	1	0	0	0
Cedar Point	1	135	0	0	0	2
Clear Lake	1	2	0	0	0	1
Clinton	1	154	0	0	0	1
Cotton Lake	2	244	0	0	0	1
Cleveland	0	0	0	0	0	1
Cordelle	0	0	0	0	0	1
Danbury	2	0	2	0	1	1
Dickinson	4	1,228	1	0	2	8
Eureka	0	0	0	0	1	2
Fairbanks	4	1,181	0	0	1	10
Five Corners	0	0	0	0	0	2
Friendswood	6	2,907	1	0	0	6
Hankamer	1	230	0	0	0	1
Hardin	5	2,449	0	0	0	8
Hastings	15	8,624	1	0	6	7
High Island	1	261	0	0	0	1
Hull	0	0	0	0	0	2
Labelle	1	1,066	0	0	0	0
Lockridge	1	280	0	0	1	1
Magnet	0	0	0	0	1	0
Manvel	0	0	0	0	0	2
Markham	0	0	0	0	0	1
McCrosky	0	0	0	0	0	1
North Cheek	0	0	0	0	0	1
Old Ocean	0	0	0	0	0	3
Orchard	0	0	0	0	0	2
Orange	2	979	0	0	0	4
Palacios	0	0	0	0	0	1
Pickett Ridge	1	0	1	0	0	1
Pierce Junction	1	442	0	0	0	1
Sandy Point	1	150	0	0	0	0
Silsbee	0	0	0	0	1	0
Seabreeze	0	0	0	0	0	2
Segno	0	0	0	0	1	2
Spindletop	1	59	0	0	0	2
Spurger	0	0	0	0	0	1
Thompson	3	278	0	1	0	2
Tomball	8	2,502	0	2	0	5
Turtle Bay	1	564	0	0	0	1
Van Vleck	0	0	0	0	0	2
West Columbia	7	2,892	1	0	0	7
Withers	3	710	0	0	0	3
Miscellaneous	6	0	6	0	4	19
Ttl. Apr.	93	31,011	15	4	19	133
Ttl. Mar.	143	47,366	31	6	23	128
Difference	50	16,355	16	2	4	5

TEXAS PANHANDLE

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Armstrong	1	0	1	0	0	0
Carson	2	488	0	0	1	12
Childress	0	0	0	0	1	5
Cottle	0	0	0	0	0	1
Collingsworth	0	0	0	0	0	2
Deaf Smith	0	0	0	0	0	1
Dickens	0	0	0	0	0	2
Floyd	0	0	0	0	0	1
Gray	11	7,086	0	0	12	34
Hall	0	0	0	0	0	1
Hansford	0	0	0	0	0	0
Hutchinson	14	6,609	0	0	17	57
Lamb	0	0	0	0	0	9
Moore	0	0	0	0	1	5
Ochiltree	0	0	0	0	0	1
Potter	0	0	0	0	1	0
Roberts	0	0	0	0	0	2
Sherman	0	0	0	0	0	1
Wheeler	0	0	0	0	3	3
Ttl. Apr.	28	14,183	1	0	36	123
Tt. Mar.	55	21,085	2	10	28	114
Difference	27	6,902	1	10	8	9

EAST TEXAS BORDER

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bowie	0	0	0	0	0	1
Cass-Rodessa	1	0	1	0	0	2
Harrison	0	0	0	0	1	1
Marion-Rodessa	13	5,215	0	0	2	18
Panola	0	0	0	0	1	1
Shelby	1	0	1	0	1	1
Ttl. Apr.	15	5,215	2	0	5	24
Ttl. Mar.	20	5,890	4	0	7	23
Difference	5	675	2	0	2	1

EAST AND EAST CENTRAL TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Anderson	4	84	0	2	3	6
Angelina	1	0	1	0	1	4
Bowie	0	0	0	0	0	1
Cherokee	1	0	1	0	0	2
Dallas	0	0	0	0	1	2
Delta	1	0	1	0	0	0
Falls	1	0	1	0	0	0
Fannin	1	0	1	0	0	0
Franklin	4	362	2	0	0	0
Gregg	87	4,923	1	0	17	44
Henderson	4	670	1	0	3	2
Houston	2	296	1	0	1	4
Leon	0	0	0	0	1	0
Limestone	1	0	1	0	0	1
McLennan	0	0	0	0	0	2
Madison	0	0	0	0	0	1
Navarro	1	0	1	0	0	3
Red River	0	0	0	0	2	1
Rockwall	0	0	0	0	0	1
Rusk	65	3,224	1	0	10	19
Smith	6	301	1	0	1	4
Titus	4	694	1	0	4	3
Trinity	0	0	0	0	2	1
Upshur	26	1,233	0	0	7	8
Van Zandt	1	0	1	0	1	2
Ttl. Apr.	210	11,787	16	2	54	111
Ttl. Mar.	227	13,449	12	4	61	143
Difference	17	1,662	4	2	7	32

SOUTHWEST TEXAS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Agua Dulce	2	104	0	0	0	4
Alfred	5	445	3	0	0	0
Alice	2	177	0	1	5	0
Alta Mesa	2	370	0	0	0	0
Alta Verde	1	0	1	0	0	0
Alta Vista	0	0	0	0	0	1
Alworth	0	0	0	0	0	1
Benavides	14	1,921	2	1	3	7
Branyon	1	38	0	0	2	4
Buchannan	0	0	0	0	0	2
Burdette Wells	0	0	0	0	0	3
Byersville	1	25	0	0	0	0
Carolina-Tex.	1	0	1	0	0	0
Charco-Rendondo	0	0	0	0	0	1
Chittim	0	0	0	0	0	1
Colorado	1	110	0	0	0	0
Cole	0	0	0	0	0	1
Colmena	0	0	0	0	0	1
Comitas	2	65	0	0	0	1
Dale	1	42	0	0	2	3
Darst Creek	4	271	0	0	3	4
Driscoll	0	0	0	0	0	1
Dunlap	2	36	0	0	0	3
Dunlay	1	50	0	0	0	1
Eagle Hill	0	0	0	0	0	2
E. Premont	1	480	0	0	1	0
E. Telferner	1	120	0	0	0	0
Escobas	0	0	0	0	0	2
East White Point	3	368	1	0	1	2
Ezzell	4	270	1	1	0	4
Flour Bluff	2	280	0	0	0	3
Heyser	10	1,349	0	0	0	11
Hoffman	8	709	1	0	1	3
Killam	1	20	0	0	1	1
Kingsville	0	0	0	0	0	1
Labbe	0	0	0	0	0	2
LaCoste	1	51	0	0	0	1
Las Animas	0	0	0	0	0	1
Las Piachos	1	51	0	0	0	0
Loma Alta	0	0	0	0	0	1
Los Olmos	0	0	0	0	0	1
Luby	6	397	2	0	2	5
Lopez	0	0	0	0	0	1
Lucas	1	0	0	1	0	0
Luling	9	1,051	0	0	2	5
Lundell	4	432	0	0	0	2
McCampbell	4	544	0	0	0	4
McFaddin	2	215	0	0	1	3
Maetze	0	0	0	0	0	1
Mercedes	0	0	0	0	0	1
Mirando Valley	2	148	0	1	0	3
Nash Creek	1	0	1	0	1	0
O'Hern	5	82	2	1	0	1
Oilton	12	601	1	3	0	6
Peters	1	0	0	1	0	0
Piedra Lumbre	3	110	0	0	0	1
Piedra Pintas	0	0	0	0	0	1
Placedo East	0	0	0	0	0	1
Plummer	1	0	0	1	0	0
Premont	2	100	0	1	1	0
Plymouth	1	121	0	0	0	2
Ramirena	1	0	0	1	0	0
Refugio	2	304	0	0	1	2
Richard King	1	25	0	0	0	0
Ricaby	0	0	0	0	0	1
Rockdale	2	15	0	0	0	1
Rutledge	0	0	0	0	0	1
Salt Flats	2	450	0	0	2	3
Sam Fordyce	1	60	0	0	0	3
Saxet	10	1,071	3	0	4	4
Seven Sisters	5	859	0	0	1	2
S. Burnell	0	0	0	0	1	0
S. Calliham	1	25	0	0	0	1
South Clara Driscoll	0	0	0	0	0	1
Somerset	0	0	0	0	0	2
Sweden	0	0	0	0	0	1
Taft	1	0	0	1	0	2
Taylor	0	0	0	0	0	1
Tomoconno	8	5,318	0	0	2	7
Von Ormy	1	3	0	0	0	0
W. Dunlap	1	10	0	0	0	1
W. Saxet	9	2,279	0	0	2	5
Miscellaneous	43	0	43	1	13	58
Ttl. Apr.	214	21,572	62	15	52	207
Ttl. Mar.	241	23,296	73	6	71	217
Difference	27	1,724	11	9	19	10

LOUISIANA GULF COAST

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Abbeville	0	0	0	0	0	2
Anse LaButte	1	75	0	0	0	0
Bayou Blue	0	0	0	0	0	1
Bay St. Elaine	1	0	1	0	0	1
Bayou Cocotriz	1	528	0	0	0	1
Bayou Des Allemands	0	0	0	0	0	2
Big Lake	0	0	0	0	0	1
Black Bayou	0	0	0	0	0	1
Caillou Island	2	418	1	0	0	1
Cameron Meadows	0	0	0	0	1	2
Cerole	0	0	0	0	0	1
Charenton	4	420	0	0	0	2
Cheneyville	1	492	0	0	1	1

Choctaw	0	0	0	0	0	1
Darrow	0	0	0	0	0	2
Dog Lake	0	0	0	0	0	1
East Baton Rouge	0	0	0	0	0	1
Fausse Point	0	0	0	0	0	1
Four Isle	1	0	1	0	0	1
Garden Island	0	0	0	0	0	1
Hackberry	3	475	1	0	2	4
Horseshoe Bay	0	0	0	0	0	1
Jeanerette	1	0	1	0	0	1
Jennings	4	1,725	0	0	2	12
Lafitte	0	0	0	0	0	3
Lake Barre	0	0	0	0	0	1
Lake Long	0	0	0	0	0	1
Lake Pelto	0	0	0	0	0	1
Leesville	0	0	0	0	0	1
Lirette	0	0	0	0	0	2
No. Crowley	1	0	1	0	1	1
New Iberia	1	0	1	0	1	5
Port Barre	1	540	0	0	1	1
Potash	0	0	0	0	0	1
Quarantine Bay	0	0	0	0	0	1
Raceland	0	0	0	0	0	1
Roanoke	1	0	1	0	0	1
So. Elton	0	0	0	0	0	1
Sorrento	1	384	0	0	0	0
Starks	0	0	0	0	1	0
Sulphur	1	0	0	1	1	4
Timbalier Bay	0	0	0	0	0	1
Valentine	2	0	1	1	1	3
Venice	1	509	0	0	0	2
Villa Platte	1	263	0	0	1	3
Vinton	0	0	0	0	0	1
Welsh	1	0	1	0	0	1
Woodlawn	1	586	0	0	2	0
Miscellaneous	2	0	2	0	4	19
Ttl. April	33	6,415	12	2	19	97
Ttl. Mar.	45	12,367	13	1	12	101
Difference	12	5,952	1	1	7	4

NORTH LOUISIANA

Summary of Field Operations

Parish—	Comp.	Prod.	Dry Gas		*Rgs.	Dlg.
Bienville	0	0	0	0	0	2
Bossier	1	1,435	0	0	1	4
Caddo-Rodessa	4	565	0	0	0	2
Caddo-Other	12	780	1	0	6	6
Caldwell	0	0	0	0	1	0
Catahoula	0	0	0	0	1	0
Claiborne	6	5,730	0	0	2	17
Concordia	0	0	0	0	0	1
De Soto	3	25	2	0	3	6
Franklin	1	0	1	0	1	0
Grant	0	0	0	0	1	1
LaSalle	1	5	0	0	1	1
Lincoln	1	205	0	0	0	2
Morehouse	1	0	0	0	1	1
Natchitoches	0	0	0	0	2	1
Ouachita	0	0	0	0	2	1
Red River	0	0	0	0	2	0
Sabine	1	10	0	0	0	7
Tensas	0	0	0	0	1	0
Union	0	0	0	0	3	3
Webster	5	4,040	0	2	2	24
Winn	1	0	1	0	0	0
Ttl. Apr.	37	12,795	5	3	30	80
Ttl. Mar.	53	18,395	12	7	28	73
Difference	16	5,600	7	4	2	7

*Gas production: Morehouse, 2,000,000 feet; Webster, 20,000,000 feet.

ARKANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bradley	0	0	0	0	0	1
Cleveland	1	0	1	0	0	0
Columbia	3	1,695	1	0	0	3
Crittendon	1	0	1	0	1	0
Desha	1	0	1	0	0	0
Hempstead	0	0	0	0	1	0
Lincoln	0	0	0	0	1	0
Little River	1	0	1	0	1	0
Lonoke	0	0	0	0	0	1
Miller-Rodessa	8	4,680	0	0	0	10
Nevada	0	0	0	0	0	1
Ouachita	1	0	1	0	0	0
Pike	0	0	0	0	1	0
Pulaski	0	0	0	0	1	1
Union	10	7,650	2	0	4	20
Ttl. Apr.	26	14,025	8	0	10	37
Ttl. Mar.	19	11,980	2	0	19	36
Difference	7	2,045	6	0	9	1

MISSISSIPPI

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Calhoun	0	0	0	0	0	1
Claiborne	2	0	2	0	0	0
George	0	0	0	0	1	0
Harrison	0	0	0	0	1	0
Hancock	1	0	1	0	0	0
Hinds	1	0	1	0	1	1
Lamar	0	0	0	0	0	1
Simpson	0	0	0	0	0	1
Yalobousha	1	0	1	0	0	0
Ttl. Apr.	5	0	5	0	3	4
Ttl. Mar.	2	0	2	0	5	4
Difference	3	0	3	0	2	0

ALABAMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Clarke	1	0	1	0	0	0
Houston	1	0	1	0	0	0
Mobile	0	0	0	0	1	0
Ttl. Apr.	2	0	2	0	1	0
Ttl. Mar.	0	0	0	0	2	0
Difference	2	0	2	0	1	0

FLORIDA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Lake	0	0	0	0	1	0
Nassau	0	0	0	0	0	1
Ttl. Apr.	0	0	0	0	1	1
Ttl. Mar.	0	0	0	0	2	0
Difference	0	0	0	0	1	1

ROCKY MOUNTAIN AREA

New Mexico

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bernalillo	0	0	0	0	0	1
McKinley	1	5	0	0	0	4
San Juan	1	42	0	0	0	3
San Miguel	0	0	0	0	0	3
Socorro	0	0	0	0	0	1
Torrance	0	0	0	0	0	1
Valencia	0	0	0	0	0	3
Lea	39	17,071	3	0	14	96
Eddy	7	560	1	0	0	35
Chaves	0	0	0	0	0	3
De Baca	0	0	0	0	0	3
Dona Ana	0	0	0	0	0	1
Roosevelt	0	0	0	0	0	1
Otero	0	0	0	0	0	2
Ttl. Apr.	48	17,678	4	0	14	158
Ttl. Mar.	55	21,876	8	4	9	163
Difference	7	4,198	4	4	5	5

Wyoming

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Big Horn	0	0	0	0	0	5
Carbon	3	1,498	1	0	0	4
Converse	0	0	0	0	1	9
Fremont	0	0	0	0	0	6
Hot Springs	1	0	1	0	0	5
Lincoln	0	0	0	0	0	3
Natrona	0	0	0	0	0	3
Niobrara	3	3,766	0	0	2	9
Park	0	0	0	0	0	4
Sweetwater	0	0	0	0	0	5
Uinta	0	0	0	0	0	3
Washakie	0	0	0	0	0	1
Weston	1	20	0	0	3	11
Miscellaneous	0	0	0	0	0	4
Ttl. Apr.	8	5,284	2	0	6	72
Ttl. Mar.	17	7,802	7	3	9	69
Difference	9	2,518	5	3	3	3

Colorado

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Adams	0	0	0	0	0	2
Archuleta	0	0	0	0	0	5
Cheyenne	0	0	0	0	0	1
Fremont	1	18	0	0	0	0
Huerfano	0	0	0	0	0	2
La Plata	0	0	0	0	0	2
Mesa	0	0	0	0	0	2
Moffat	0	0	0	0	0	1
Park	0	0	0	0	0	3
Rio Blanco	0	0	0	0	0	1
Routt	0	0	0	0	1	2
Miscellaneous	0	0	0	0	1	8
Ttl. Apr.	1	18	0	0	2	29
Ttl. Mar.	0	0	0	0	1	31
Difference	1	18	0	0	1	2

Montana

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Big Horn	0	0	0	0	0	2
Carbon	0	0	0	0	0	6
Fergus	0	0	0	0	0	5
Glacier	3	71	0	1	1	5
Petroleum	0	0	0	0	0	2
Pondera	0	0	0	0	1	1
Toole	2	88	0	0	0	18
Yellowstone	0	0	0	0	0	4
Miscellaneous	0	0	0	0	0	11
Ttl. Apr.	5	159	0	1	2	54
Ttl. Mar.	7	380	2	2	4	48
Difference	2	221	2	1	2	4

Utah

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Total April	0	0	0	0	1	7
Total March	0	0	0	0	1	7
Difference	0	0	0	0	0	0

Nebraska

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Total April	0	0	0	0	1	6
Total March	0	0	0	0	0	5
Difference	0	0	0	0	1	1

EASTERN KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Floyd	7	20	1	5	4	5
Martin	6	112	0	1	3	7
Wolfe	1	10	0	0	1	0
Magoffin	1	6	0	0	2	0
Lee	4	34	1	0	3	6
Powell	5	25	0	0	4	5
Pike	0	0	0	0	0	3
Knott	0	0	0	0	0	4
Johnson	0	0	0	0	0	1
Ttl. Apr.	24	207	2	6	17	31
Ttl. Mar.	19	238	0	12	6	29
Difference	5	31	2	6	11	2

WESTERN KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Breckenridge	6	5	2	3	0	3
Butler	2	0	2	0	0	3
Daviess	8	72	1	1	0	8
Grayson	1	0	1	0	0	1
Hancock	6	90	2	0	0	4
Henderson	2	1,200	1	0	4	5
McLean	11	215	5	1	0	9
Muhlenberg	0	0	0	0	0	3
Ohio	14	123	4	1	0	8
Union	0	0	0	0	0	1
Webster	3	8	1	0	0	1
Ttl. Apr.	53	1,713	19	6	4	46
Ttl. Mar.	31	433	15	1	4	40
Difference	22	1,280	4	5	0	6

EASTERN FIELDS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Allegany	65	44	0	0	3	32
Bradford	175	173	0	0	4	50
Middle field	11	8	0	2	2	7
Butler-Armstrong	4	28	0	2	1	9
N. Y.-Pa. gas field	3	0	2	1	4	21
S. W. Pa.	11	1	4	6	4	26
S. E. Ohio	17	120	3	4	5	31
W. Virginia	44	99	14	20	27	94
Ttl. Apr.	330	473	23	35	50	270
Ttl. Mar.	361	2,550	27	60	57	295
Difference	31	2,077	4	25	7	15

Note—Completions include 55 water-intake wells in Bradford and 21 in Allegany.

OHIO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ashland	2	0	0	2	3	1
Athens	3	0	3	0	6	1
Belmont	1	0	0	1	1	2
Coshocton	0	0	0	0	0	2
Cuyahoga	0	0	0	0	1	3
Fairfield	1	0	0	1	2	1
Gallia	0	0	0	0	1	1
Guernsey	2	0	1	1	0	5
Hocking	0	0	0	0	1	1
Holmes	0	0	0	0	1	1
Huron	1	0	0	1	0	3
Knox	5	104	0	2	6	5
Lawrence	0	0	0	0	0	2
Licking	7	24	1	4	6	6
Lorain	4	0	1	3	1	4
Medina	0	0	0	0	4	1
Meigs	1	0	0	1	2	5
Monroe	3	10	0	2	2	8
Morgan	1	0	1	0	1	2
Muskingum	3	0	1	2	2	1
Noble	1	0	0	1	0	4
Perry	0	0	0	0	1	2
Ross	0	0	0	0	0	1
Stark	2	0	1	1	0	5
Summit	0	0	0	0	0	2
Trumbull	0	0	0	0	0	1
Tuscarawas	2	0	1	1	0	3
Vinton	0	0	0	0	0	1
Washington	10	48	1	3	7	14
Wayne	3	0	3	0	0	0
Ttl. Apr.	52	186	14	26	48	88
Ttl. Mar.	54	285	15	30	36	90
Difference	2	99	1	4	12	2

LIMA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Hancock	0	0	0	0	0	1
Seneca	2	0	0	2	2	1
Putnam	0	0	0	0	1	1
Wood	0	0	0	0	0	1
Ttl. Apr.	2	0	0	2	3	4
Ttl. Mar.	3	45	0	0	1	5
Difference	1	45	0	2	2	1

INDIANA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Crawford	0	0	0	0	0	2
Daviess	2	0	2	0	0	1
DeKalb	0	0	0	0	0	1
Hancock	0	0	0	0	0	1
Harrison	0	0	0	0	0	1
Henry	1	0	0	1	0	0
Huntington	0	0	0	0	0	1
Jay	1	5	0	0	0	0
Jennings	0	0	0	0	0	1
Knox	1	0	0	1	0	3
Lagrange	0	0	0	0	0	1
Parke	1	0	1	0	0	0
Perry	3	5	2	0	0	3
Pike	0	0	0	0	0	2
Porter	0	0	0	0	0	1
Posey	1	0	1	0	1	3
Spencer	0	0	0	0	1	0
Sullivan	1	0	1	0	0	3
Vigo	0	0	0	0	0	1
Ttl. Apr.	11	10	7	2	2	25
Ttl. Mar.	8	0	3	5	6	25
Difference	3	10	4	3	4	0

ILLINOIS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bond	2	0	1	1	0	2
Clark	0	0	0	0	0	2
Clay	1	1,104	0	0	0	5
Crawford	0	0	0	0	0	1
Christian	0	0	0	0	1	0
Champaign	0	0	0	0	0	1
Clinton	56	8,385	4	0	10	56
Edgar	0	0	0	0	0	1
Edwards	0	0	0	0	0	1
Effingham	0	0	0	0	0	3
Fayette	2	137	0	0	1	7
Franklin	1	0	1	0	0	0
Jasper	0	0	0	0	0	1
Jefferson	4	925	1	0	3	3
Lawrence	1	10	0	0	0	1
Macon	1	0	1	0	0	0
Macoupin	1	0	0	1	0	1
Menard	0	0	0	0	0	1
Marion	7	920	3	0	7	30
McDonough	0	0	0	0	0	1
Massac	0	0	0	0	0	1
Montgomery	0	0	0	0	0	1
Piatt	0	0	0	0	0	1
Pope	0	0	0	0	0	1
Perry	1	0	1	0	0	0
Randolph	0	0	0	0	0	1
Richland	14	9,896	4	0	1	21
Saline	0	0	0	0	0	2
St. Clair	3	365	0	0	0	2
Shelby	1	0	1	0	0	0
Vermilion	0	0	0	0	0	1
Warren	0	0	0	0	0	1
Williamson	0	0	0	0	0	1
Washington	1	0	1	0	0	0
Wayne	3	1,116	2	0	1	4
White	0	0	0	0	0	2
Ttl. Apr.	99	22,908	20	2	24	156
Ttl. Mar.	66	16,663	18	0	17	133
Difference	33	6,245	2	2	7	23

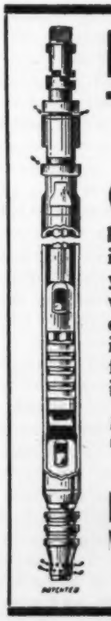
MICHIGAN

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Adams	1	150	0	0	0	6
Bentley	5	636	0	0	0	10
N. Buckeye	10	1,313	1	0	3	9
S. Buckeye	6	1,045	2	0	1	9
Clayton	4	1,857	1	0	2	3
Deerfield	0	0	0	0	0	1
Dorr	3	250	0	0	1	3
Edenville	9	3,951	2	0	2	14
Larkin	0	0	0	0	0	1
Monterey	6	3,125	1	0	3	8
New Haven	1	0	1	0	1	0
Porter	1	65	0	0	2	1
Salem	8	1,702	1	0	1	2
Secord	0	0	0	0	0	1
Sherman	0	0	0	0	1	3
Trowbridge	0	0	0	0	2	2
Vernon	0	0	0	0	1	0
W. Branch	5	293	2	0	2	7
Winfield	1	0	0	1	0	0
Wise	0	0	0	0	0	2
Wisner	0	0	0	0	0	1
Wildcats	24	130	21	1	9	58
Ttl. Apr.	84	14,517	32	2	31	141
Ttl. Mar.	57	9,534	20	4	30	128
Difference	27	4,983	12	2	1	13

A.A.P.G. Fall Session

The West Texas Geological Society is sponsoring all plans and arrangements for the fall meeting of the American Association of Petroleum Geologists, which is to be held at El Paso, Tex. Officials of the local society are H. A. Hemphill, president, Magnolia Petroleum Co.; W. D. Anderson, vice president, Amerada Petroleum Corp., and W. C. Fritz, secretary-treasurer, Skelly Oil Co., all of Midland. A large attendance is expected from the Pacific, eastern and Mid-Continent territories at the El Paso meeting.



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OIL CONSERVATION

(Continued from Page 53)

been a natural expansion in repressuring and pressure-maintenance projects. The two terms are by no means synonymous, in that repressuring, as ordinarily used, contemplates the injection into the producing reservoir of gas, air or water, through existing wells or especially drilled wells, so as to drive the oil still remaining in the reservoir rocks after the depletion of all, or practically all reservoir energy or pressure, to adjacent wells from which it can be pumped. Millions of barrels of oil have been recovered and more millions of barrels of oil will be recovered by this method, that would otherwise have remained forever unrecoverable.

On the other hand, pressure maintenance, as the term indicates, contemplates, usually, the reinjection of the gas unavoidably produced along with the oil, back into the reservoir so as to at least retard the otherwise inevitable decline in formation pressure. Extraneous gas may also be injected. Such an operation is usually commenced relatively early in the life of a lease or pool, and there are a number of such projects throughout the oil country that are resulting in greatly prolonging the natural flowing life of the wells, and which bid fair to finally result in recoveries of oil far and beyond that reasonably to have been expected under older and less scientific methods.

A condition that has retarded and made most difficult the universal application of many of the improved modern methods heretofore mentioned has been the fact of the diversity of ownership of leases in practically all oil fields, and this competitive feature coupled with the well known characteristic of rugged individualism, typical of the average oil producer, does not make for unanimity of thought and policy with respect to development and operating methods, and in turn has resulted in many wasteful practices, both physical and economic. A growing tendency toward unitization of entire pools has been noticeable in recent years, and as the manifold benefits of such a plan of communitized pool development and operation become more and more evident, an acceleration in the adoption of such a fundamentally sound practice will undoubtedly become more apparent. The primary appeal in the theory of unitization is many-sided. It obviously lends itself readily to many economies not otherwise easily attainable, such as; (a) saving in development cost through the elimination of needless wells; (b) the location of such wells as are drilled most advantageously instead of by the time-honored plan of drilling arbitrarily located wells along competitive property lines; (c) elimination of a senseless duplication of many costly facilities by individual operators under the free-for-all, catch-as-catch-can competitive system, and (d) the adoption of uniform and most efficient well completion and operating methods, to afford better control of gas-oil ratios, maintenance of reservoir pressure, prevention of premature water encroachment, so as to obtain longer flowing life of wells and increased ultimate recovery at substantially lowered costs. Undoubtedly, an increase in the industry's utilization of the fundamentally sound and economically desirable principle of unitization will still further strengthen the advance that has been made in recent years by the industry in the interest of conservation.

Currently, there is much consideration within the industry being given to a major problem now confronting us that has to do with proper and uniform well spacing and the consequent elimination of unnecessary drilling of wells. Technical data, such as oil viscosity, gas solubility in oil, bottom-hole pressures, rate of water coning, dependent upon rate of production, etc., have caused the state conservation authorities to give more weight in their allocation formulas to some allocation unit such as 20 or 40 acres, whereby more uniform development of the pool, with consequent less inequalities in drainage will be attained, and with less emphasis upon the potential factor which is often due to local formational conditions rather than a measure of comparative oil recovery. The future will probably see the land owner, royalty owner and oil operator better protected in their correlative rights, and assured of more efficient use of the available reservoir energy in new oil pools, by consistent allocation of part of the oil allowable on an acreage basis.

Only in the past 15 to 20 years has the rapid development of natural, or casinghead gasoline plant expansion brought them into focus as a real conservation utility. Time was when all of the gas hurriedly and wastefully produced with oil under wide-open flow methods was blissfully blown into the air. Now, not only is it most unusual to find such large quantities of gas being produced from oil wells, but such gas as is unavoidably produced is largely processed through a plant for the extraction of its valuable gasoline content, and in most cases, where there is an available market, the resultant residue gas also finds its way into a gas line for efficient utilization, or, in a growing number of cases, is compressed and reinjected into the reservoir from which it was originally produced, there to aid in maintaining pressure in order to drive more and more oil through the reservoir rocks to the well bore where it can be naturally or artificially produced. Theoretically at least, in some such projects, after the oil production shall have been exhausted, there will still remain a reservoir at least partially filled with gas to be produced and marketed.

Most that has thus far been said has had specific reference to oil conservation, apparently as distinguished from gas. Needless to say here however, gas fields that are not associated with or directly a part of oil fields are few and far between. So, it obviously follows that development of conservation practices in the production of oil has its inevitably favorable reflection in the conservation of gas. Any oil producing methods or practices in the interest of conservation are primarily those looking to the avoidance of waste of pressure, which nine times out of 10 is another way of saying the avoidance of the waste of gas. Oil and gas producers' interests therefore are thoroughly in harmony. What is good sound conservation practice for an oil producer is bound to redound to the benefit of the gas producer; contrariwise, wasteful, inefficient methods on the part of an oil producer are certain to be a "pain in the neck" for a producer of gas.

Panhandle Cited

Probably the most striking, and at the same time most shameful and shocking example of waste in the entire history of the oil and gas industry and the eventual conservation measures adopted for its prevention, is that long prevalent in the Panhandle oil and gas field of Texas, where for years, by reason of an intricately involved and many-sided set of circumstances, entirely too long a story to here more than mention, a violent and utterly unthinkable actual physical waste of gas prevailed until it was on the verge of becoming a national scandal. Both oil and gas producers apparently vied with each other in what now seems a diabolical contest to determine who could produce and wantonly waste the greatest volume of one of the most valuable natural resources of this nation. Finally, they jointly achieved the questionable and unenviable distinction of wastefully discharging into the Panhandle ozone in excess of 1,000,000,000 feet of gas daily.

A billion feet of gas! Even in a group of gas men such a tremendous volume is difficult to comprehend or imagine. Let us then convert this gas volume into more tangible terms so that even we laymen may grasp its significance. One of my engineering friends with a yen and flair for manipulating a slide rule has computed that this volume of gas—incidentally, exceeding, according to the then current bulletins of the United States Bureau of Mines, the total daily consumption of natural gas in the United States—is the equivalent in heat value of 1,300 carloads of high grade bituminous coal, 50 tons to the car, or of 175,000 bbls. of average Panhandle crude oil. Imagine willfully destroying daily 1,300 carloads of coal! Imagine willfully destroying 175,000 bbls. of crude oil daily!

It has also been computed by this same slide rule expert that this tremendous volume of gas, efficiently consumed in prime movers, is capable of developing electric energy in excess of the combined capacity to produce such energy of the hydro-electric installations built and building at Boulder, Norris, Booneville and Grand Coulee dams. And think of the hundreds of millions of dollars those four plants cost the taxpayers of this country!

Startling Examples

Remember, these examples are only for one 24 hours of waste. Yet, as staggering and startling as such examples of only one form of this waste are, they seem actually mild compared to the same examples computed to cover the total accumulated waste of gas in this field up until it was effectively stopped. From inception of operations to the effective date of remedial measures, a little more than two years ago, approximately 2½ trillion feet of gas had been discharged into the air. Converted into terms of heat value of coal, this unimaginable quantity of gas is the approximate equivalent of 3,250,000 carloads of coal, which is enough coal to form a train, averaging 40 feet to the car, 21,564 miles long.

In addition to such literal physical waste of so valuable an irreplaceable natural resource and commodity, the disastrous effects upon the ultimate recovery of oil from identical or interrelated producing horizons is, in the light of our knowledge and appreciation of such values today, painful indeed to contemplate. In the case of "Danciger Oil & Refining Co. vs. the Railroad Commission," competent engineers testified that if the then existing waste of gas and consequent dissipation of energy continued (and it did continue for several years until the waste of gas was approximately double the then current volume) some 250,000,000 to 300,000,000 bbls. of oil would be left unrecovered in the Panhandle reservoir. Such testimony was neither questioned nor refuted.

Fortunately, constructive and conservation-minded elements in the oil and gas industry in the Panhandle, aided and abetted by an aroused public opinion, finally secured the enactment of the present gas conservation statute of the State of Texas, known as House Bill 266. This measure has often been referred to as the most comprehensive conservation statute so far enacted by any of the states.

Armed with such a measure, the railroad commission, through diligent application thereof, soon after the effective date of the statute, succeeded in stopping practically all the previous viciously wasteful operating practices in the entire field, and brought the volume of avoidable waste of gas to a negligible if not in fact irreducible minimum. That was about two years ago and it is indeed heartening to report that this favorable condition still continues. Indeed, it is believed that an informed public opinion would not today allow such a condition to again exist.

Despite all that has been said as to the substantial progress so far made in the industry in the elimination of wasteful practices, it is thought that we are still but at the threshold of the progress yet to be made in true conservation. Undoubtedly, a decade hence we will regard in retrospect our present-day knowledge and methods as rather crude and primitive, precisely as today we appraise those of a decade ago. The important, the encouraging point however is that we have made and we are making definite progress today our goal.

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well, location, and county—	S.T.R.	Depth	Status
Wilshire Oil, No. 1 Gaviota, Santa Barbara	35- 5-33	3,801	gr. sd. drlg.
General Pet., No. 22 Erburu, Capitan, Santa Barbara	32- 5-30	1,400	O.S. drlg.
South Crude Oil, No. 2-191, Coal Oil Point, S. Barbara	tideland	5,510	whipstock 865
Ohio Oil, No. 1 Morrison, Santa Maria, Santa Barbara	27-10-34	5,198	sd. sh. drlg.
Hancock-Bush, No. 2 Bradley, Santa Maria, S. Barbara	26-10-34	5,015	sd. sh. drlg.
Getty, George, Inc., No. 4 Vicente, Santa Barbara	27-10-34	4,699	flow 3,000 b.d.
Bankline Oil, No. 1 Silva, Santa Maria, Santa Barbara	7- 9-33	3,975	sd. sh. drlg.
Cal. Lands, No. 4 Gallison, Santa Maria, S. Barbara	26-10-34	5,416	sd. sh. drlg.
Cal. Lands, No. 1 MacDonnell, S. Maria, S. Barbara	28-10-34	5,228	flow. 2,480 b.d.
Moore, E. H., No. 1-F Sugar, Santa Maria, S. Barbara	19-10-34	3,873	sd. sh. drlg.
G. & B. Oil, No. 1 B. & G., Santa Maria, Santa Barbara	26-10-34	3,497	sd. sh. drlg.
Selegna Oil, No. 1 S. M., Santa Maria, Santa Barbara	26-10-34	2,760	sd. sh. drlg.
Signal Oil, No. 12 Yelkin, Santa Maria, Santa Barbara	26-10-34	1,984	sd. sh. drlg.
Union Oil, No. 1 McCoy, Santa Maria, Santa Barbara	27-10-34	3,797	sd. sh. drlg.
Union Oil, No. 3 LeRoy, Santa Maria, Santa Barbara	24-10-35	5,385	sd. sh. drlg.
Union Oil, No. 2-2 O'Donnell, Santa Maria, S. Barbara	20-10-34	4,770	sd. sh. drlg.
Union Oil, No. 3 Bradley, Santa Maria, Santa Barbara	25-10-34	4,490	sd. sh. drlg.
Wilson Oil, No. 1-B, Santa Maria, Santa Barbara	26-10-34	5,373	fish. tubing
Sunshine Oil, No. 4 Wallace, Santa Maria, S. Barbara	27-10-34	3,884	sd. sh. drlg.
Jones, F. E., No. 2 Wisconsin, Santa Maria, S. Barbara	27-10-34	4,657	pump. 170 b.d.
Standard Oil, No. 1 Cat Canyon, Santa Barbara	27- 9-33	5,529	redrlg. 5,141
Petrol Corp., No. 21 Tognazzini, Gato Rdg., S. Barbara	9- 8-32	2,612	pmp. 2,000 b.d.
United West. Oil, No. 1, Los Olivos, Santa Barbara	16- 7-30	3,120	hd. sd. drlg.
Carpinteria Oil, No. 1 Carpinteria, Santa Barbara	32- 4-25	2,390	gr. sh. drlg.
High Mesa Oil, No. 1 Butcher, Ojai, Ventura	16- 4-22	1,380	hd. sh. drlg.
Rowe, W. G., No. 1 Johnson, Oxnard, Ventura	15- 1-22	4,475	br. sh. drlg.
Texas Co., No. 5 Yale, South Mountain, Ventura	13- 3-21	4,563	sd. sh. drlg.
Merchants Pet., No. 8 Sespe, Ventura	1- 4-20	396	sd. sh. drlg.
Claran, F. E., No. 1 Hardison, Sespe, Ventura	22- 4-20	232	hd. sd. drlg.
Continental, No. 1 Elkins, Hopper Canyon, Ventura	23- 4-19	3,384	hd. sh. drlg.
C. C. M. Oil, No. 21 Hobson, Rincon, Ventura	8- 3-24	1,973	sd. sh. drlg.
C. C. M. Oil, No. 22 Hobson, Rincon, Ventura	17- 3-24	4,250	will deepen
Richfield Oil, No. 6 Hobson, Rincon, Ventura	17- 3-24	2,580	gravel pack
Tide Water, No. 19 V.L.W., Ventura Ave., Ventura	26- 3-23	8,596	O.S. drlg.
Tide Water, No. 68 Lloyd, Ventura Ave., Ventura	27- 3-23	4,800	flow. 210 b.d.
Tide Water, No. 75 Lloyd, Ventura Ave., Ventura	27- 3-23	2,982	sd. sh. drlg.
Tide Water, No. 76 Lloyd, Ventura Ave., Ventura	27- 3-23	4,850	sd. sh. drlg.
Tide Water, No. 111 Lloyd, Ventura Ave., Ventura	27- 3-23	7,144	fish. lines
Tide Water, No. 127 Lloyd, Ventura Ave., Ventura	27- 3-23	3,770	sd. sh. drlg.
Tide Water, No. 7 Hartman, Ventura Ave., Ventura	22- 3-23	952	sd. sh. drlg.
Tide Water, No. 11 McGonigle, Ventura Ave., Ventura	23- 3-23	5,298	sd. sh. drlg.
Shell Oil, No. 94 Taylor, Ventura Ave., Ventura	20- 3-23	8,555	sd. sh. drlg.
Shell Oil, No. 31 Edison, Ventura Ave., Ventura	20- 3-23	5,395	sd. sh. drlg.
Shell Oil, No. 37 Gosnell, Ventura Ave., Ventura	28- 3-23	7,396	sd. sh. drlg.
General Pet., No. 13 Notten, Ventura Ave., Ventura	28- 3-23	9,871	P.B. 9,402
Lloyd Corp., No. 1 Dabney-Lloyd, Vent. Ave., Ventura	24- 3-23	5,694	sd. sh. drlg.
Amerada Pet., No. 5 Beer, Devils Den, Kern	22-26-19	8,130	hd. sh. drlg.
Gibson Oil, No. 3 Alferitz, Devils Den, Kern	14-25-18	380	sd. sh. drlg.
Hampshire Oil, No. 1 McKittrick, Kern	26-30-22	3,040	dry; abd.
Lyse & Sonne, No. 1 Pasadena, McKittrick, Kern	28-30-22	487	sd. sh. drlg.
Chico-Martinez Oil, No. 1 Holly, South Belridge, Kern	1-29-20	592	sd. sh. drlg.
Par-Mer Oil, No. 1 Kenden, South Belridge, Kern	25-29-20	471	sd. sh. drlg.
Ohio Oil, No. 1 Ford, South Belridge, Kern	6-29-22	7,275	dry; abd.
Randan Pet., No. 1 Theta, Lost Hills, Kern	3-26-20	1,625	sd. sh. drlg.
Belridge Oil, No. 27-5 North Belridge, Kern	27-27-20	5,898	br. sh. drlg.
Belridge Oil, No. 27-6 North Belridge, Kern	27-27-20	8,000	cmtd. 9,000
Belridge Oil, No. 35-26 North Belridge, Kern	35-27-20	7,372	br. sh. drlg.
Tide Water A. O., No. 3-21 North Belridge, Kern	21-27-20	5,498	br. sh. drlg.
Richfield Oil, No. 2 North Belridge, Kern	22-27-20	5,385	br. sh. drlg.
Texas Co., No. 3 Martin, North Belridge, Kern	22-27-20	8,160	cmtd. 8,148
Texas Co., No. 4 Martin, North Belridge, Kern	22-27-20	5,650	br. sh. drlg.
General Pet., No. 1 St. Helens, Belridge, Kern	12-28-20	8,685	P.B. 1,500
Pan-May Oil, No. 1 Coffee, Round Mountain, Kern	31-27-29	812	hd. sd. drlg.
Coast Expl., No. 1 Coffee, Round Mountain, Kern	6-28-29	2,033	dry; abd.
Crestmont Oil, No. 3 Staley, Round Mountain, Kern	8-28-29	1,682	pump. 61 b.d.
McDonald, H. A., No. 3 Larkin, Round Mountain, Kern	12-28-28	1,938	pump. 285 b.d.
Shell Oil, No. 19 Freeman, Round Mountain, Kern	20-28-29	1,830	O.S. drlg.
Rubenstein, A. B., No. 1 Lerdo, Kern	20-28-27	3,302	pump. water
Helm & Smith, No. 3-A Kernco, Kern River, Kern	34-28-28	490	idle
Hast Oil, No. 1 Kern, Kern River, Kern	34-28-28	251	sd. sh. drlg.
Shell Oil, No. 1 Durnal, Adobe Canyon, Kern	24-27-28	485	sd. sh. drlg.
Carter, J. P., No. 2 S.P.L., Mount Poso, Kern	3-27-28	1,456	cleaning out
Shell Oil, No. 64 Mathews, Mount Poso, Kern	4-27-28	1,671	O.S. drlg.
Shell Oil, No. 23 Security, Mount Poso, Kern	16-27-28	1,675	sd. sh. drlg.
Bargol Oil, No. 2 Claflin, Mount Poso, Kern	10-27-27	2,210	cleaning out
Framac Oil, No. 3 Brown, Mount Poso, Kern	22-27-27	1,351	cleaning out
Reynolds Oil, No. 1 Premier, Mount Poso, Kern	30-27-27	2,850	P.B. 2,704
Coronado Oil, No. 1 Bonestello, Mount Poso, Kern	28-26-28	1,780	dry; abd.
Master Pet., No. 3 Recovery, Mount Poso, Kern	33-26-28	1,599	sd. sh. drlg.
Ring Oil, No. 3 Loudon, Mount Poso, Kern	32-26-28	1,710	O.S. drlg.
Western Gulf Oil, No. 35 KCL, Fruitvale, Kern	14-29-27	3,003	sd. sh. drlg.
Union Oil, No. 1 Berry, Arvin, Kern	15-31-29	6,812	redrlg. 6,135
Seaboard Oil, No. 1 KCL, Wasco, Kern	26-27-24	10,243	will deepen
Superior Oil, No. 3 Wagner, Rio Bravo, Kern	35-28-25	10,940	sd. sh. drlg.
Superior Oil, No. 4 Wagner, Rio Bravo, Kern	35-28-25	6,997	sd. sh. drlg.
Superior Oil, No. 2 Geissinger, Rio Bravo, Kern	35-28-25	3,697	sd. sh. drlg.
Superior Oil, No. 1 Anderson, Rio Bravo, Kern	35-28-25	9,491	sd. sh. drlg.
Union Oil, No. 2-34 KCL, Rio Bravo, Kern	34-28-25	11,204	idle
Union Oil, No. 3-34 KCL, Rio Bravo, Kern	34-28-25	4,839	sd. sh. drlg.
Getty Oil, No. 1 Ramsey, Rio Bravo, Kern	35-28-25	11,470	O.S. drlg.
General Pet., No. 1 Wagoner, Rio Bravo, Kern	35-28-25	10,192	fishing
General Pet., No. 2 Wagoner, Rio Bravo, Kern	35-28-25	10,090	sd. sh. drlg.
Standard Oil, No. 18-1 KCL, Una, Kern	29-28-26	7,720	sd. sh. drlg.
Shell Oil, No. 83-35 KCL, McFarland, Kern	35-26-25	1,674	sd. sh. drlg.
Dilmar Oil, No. 1 Quinn, Jasmin, Kern	15-25-27	2,956	P.B. 2,875
Dilmar Oil, No. 3 Quinn, Jasmin, Kern	15-25-27	2,956	P.B. 2,875
Standard Oil, No. 11-2 KCL, Greeley, Kern	20-29-26	11,476	sd. sh. drlg.
Standard Oil, No. 11-13 KCL, Greeley, Kern	20-29-26	7,745	flow. 798 b.d.
Standard Oil, No. 11-14 KCL, Greeley, Kern	18-29-26	7,800	flow. 312 b.d.
Standard Oil, No. 1 Rose, Greeley, Kern	20-29-26	8,000	sd. sh. drlg.
Continental Oil, No. 1-E KCL, Stevens, Kern	17-30-26	8,050	sd. sh. drlg.
Standard Oil, No. 15-2 KCL, Canfield Ranch, Kern	27-30-26	1,743	sd. sh. drlg.
Shell Oil, No. 34-30-A KCL, Ten Section, Kern	30-30-26	8,200	O.S. drlg.
Shell Oil, No. 47-30-B KCL, Ten Section, Kern	30-30-26	6,992	sd. sh. drlg.
Shell Oil, No. 58-30-B KCL, Ten Section, Kern	30-30-26	5,584	sd. sh. drlg.
Shell Oil, No. 21-32-B KCL, Ten Section, Kern	32-30-26	8,220	O.S. drlg.
Shell Oil, No. 81-14-A KCL, Canal, Kern	14-30-25	8,350	flow. 1,836 b.d.
Ohio Oil, No. 6-E KCL, Canal, Kern	14-30-25	7,365	sd. sh. drlg.
Ohio Oil, No. 8-A KCL, Buena Vista Lake, Kern	32-31-26	10,195	sd. sh. drlg.
Standard Oil, No. 11 Monarch, Midway-Sunset, Kern	7-11-23	1,480	pump 43 b.d.
Berry & Ewing, No. 2 Midway-Sunset, Kern	31-32-24	1,136	O.S. drlg.
Texas Co., No. 1 Pioneer, Midway-Sunset, Kern	33-11-23	8,444	hd. sh. drlg.
Salling Oil, No. 9 Midway-Sunset, Kern	2-11-24	970	pump. dry
A. B. S. Corp., No. 12 Lewis, Sunset, Kern	20-11-23	3,901	sd. sh. drlg.
Hall-Baker, No. 1, Comanche Point, Kern	35-32-29	3,235	dry; abd.
Shell Oil, No. 4-26 KCL, San Emidio, Kern	26-11-22	9,312	sd. sh. drlg.
Richfield Oil, No. 1 KCL, Wheeler Ridge, Kern	28-11-20	1,965	cmtd. 1,570
Pure Oil, No. 1 SPL, Cantua, Fresno	31-18-17	10,862	fish. D.P.
Gauthier, J., No. 3 Hubbard, Panoche Creek, Fresno	12-14-11	362	sd. sh. drlg.
Pet. Sec., No. 2 Gatchell, Jacalitos, Fresno	18-20-16	6,850	cmtd. 6,700
Dauphin Dev., No. 1 Alcalde, Fresno	30-21-14	3,778	fish D.P.
Shell Oil, No. 1 Diamond, Coalinga, Fresno	35-20-14	692	dry; abd.
Wilcox, J. F., No. 6, Coalinga, Fresno	11-20-14	360	sd. sh. drlg.
K. N. D. A., No. 67-20-J Kettleman North, Fresno	20-21-17	10,670	sd. sh. drlg.
K. N. D. A., No. 6-8-Q Kettleman North, Kings	6-22-18	8,125	gr. sd. drlg.
K. N. D. A., No. 38-8-Q Kettleman North, Kings	8-22-18	8,015	gr. sd. drlg.
K. N. D. A., No. 27-16-Q Kettleman North, Kings	16-22-18	5,545	br. sh. drlg.
K. N. D. A., No. 58-16-Q Kettleman North, Kings	16-22-18	6,763	br. sh. drlg.
K. N. D. A., No. 47-18-Q Kettleman North, Kings	18-22-18	7,930	gr. sd. drlg.
K. N. D. A., No. 43-20-Q Kettleman North, Kings	20-22-18	6,990	gr. sd. drlg.
K. N. D. A., No. 27-22-Q Kettleman North, Kings	22-22-18	4,962	sd. sh. drlg.
Standard Oil, No. 46-13-H Kettleman North, Fresno	13-21-16	10,043	sd. sh. drlg.
Standard Oil, No. 27-21-J Kettleman North, Fresno	21-21-17	10,920	P.B. 10,763
Standard Oil, No. 58-33-J Kettleman North, Fresno	33-21-17	7,890	gr. sd. drlg.
Standard Oil, No. 2-11-P Kettleman North, Kings	11-22-17	8,380	fish. D.P.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Acd., acidized.
B.O., barrels of oil.
B.P.D., barrels per day.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
Br. sh., brown shale.
B.S., basic sediment.
Cd. or Crd., cored.
C.D., corrected depth.
Cg., coring.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging or plugged back.
P.B.P., pulling or pulled big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtr., or St. sidetracking.
S.D.P.L., shut down for pipe line.
S.D.O., or S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing)
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T.P., tubing pressure.
Tr., tract.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting for cement to set.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shutoff O.K.
W.S.O.N.G., water shutoff no good.
W.S.R. or W.O.S.R., awaiting standard rig.
Wtr., water.

Standard Oil, No. 78-1-P Kettleman North, Kings	1-22-17	5,985	sd. sh. drlg.
Standard Oil, No. 87-1-P Kettleman North, Kings	1-22-17	8,045	hd. sd. drlg.
Standard Oil, No. 21-13-P Kettleman North, Kings	13-22-17	7,248	redrlg. 5,864
Standard Oil, No. 41-7-Q Kettleman North, Kings	7-22-18	8,150	flow. 1,776 b.d
Standard Oil, No. 74-7-Q Kettleman North, Kings	7-22-18	6,580	sd. sh. drlg.
Standard Oil, No. 85-7-Q Kettleman North, Kings	7-22-18	7,696	sd. sh. drlg.
Wilshire Oil, No. 1 Cowell, Half Moon Bay, San Mateo	20- 6-5	8,030	P.B. 2,525
Ohio Oil, No. 1-A Willard, Willows, Glenn	18-20-2	2,297	sd. sh. drlg.
Richfield Oil, No. 1 Potrero Hills, Solano Co.	10- 4-1	2,198	sd. sh. drlg.

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well, location, and county—	S.T.R.	Depth	Status
Basin Oil, No. 1, Potrero, Los Angeles	34- 2-14	4,582	sd. sh. drlg.
Ohio Oil, No. 12 Gough, El Segundo, Los Angeles	7- 3-14	6,691	sd. sh. drlg.
Apex Pet. Corp., No. 3 Elsie, El Segundo, Los Angeles	7- 3-14	2,140	sd. sh. drlg.
D. & B. Oil, No. 1, Lomita, Los Angeles	30- 4-13	3,895	sd. sh. drlg.
McCaslin, W. E., No. 1 Whitney, Torrance, L. Angeles	23- 4-14	4,485	sd. sh. drlg.
Torrance Oil, No. 1 Lyman, Torrance, Los Angeles	14- 4-14	3,978	sd. sh. drlg.
Andrews & Mitchell, No. 5 Kirk, Torrance, L. Angeles	23- 4-14	5,098	pump. 80 b.d.
Anderson, N. H., No. 1, Torrance, Los Angeles	15- 4-14	4,976	sd. sh. drlg.
McDonald & Burns, No. 5 Moore, Torrance, L. Angeles	23- 4-14	3,575	cleaning out
McDonald & Burns, No. 8 Moore, Torrance, L. Angeles	23- 4-14	3,998	sd. sh. drlg.
Emerald Oil, No. 1 fee, Torrance, Los Angeles	23- 4-14	5,120	cleaning out
Camp, C. W., No. 12 Torrance, Los Angeles	23- 4-14	5,017	sd. sh. drlg.
Doyle Pet., No. 2 Neill, Torrance, Los Angeles	23- 4-14	4,998	cleaning out
Doyle Pet., No. 3-A Getty, Torrance, Los Angeles	14- 4-14	4,992	sd. sh. drlg.
Elyod Oil, No. 1 Post, Torrance, Los Angeles	14- 4-14	4,998	pump. 205 b.d.
Timco Oil, No. 6 Lomita, Torrance, Los Angeles	14- 4-14	5,000	pump. 138 bd.
Marel Oil, No. 1 Leaver, Torrance, Los Angeles	14- 4-14	5,025	sd. sh. drlg.
Woolner Oil, No. 1, Torrance, Los Angeles	14- 4-14	5,017	pump. 110 b.d.
Krause & Baker, No. 2 Gladys, Torrance, Los Angeles	14- 4-14	3,795	rigged up
Peters Royalty, No. 1, Torrance, Los Angeles	14- 4-14	5,023	sd. sh. drlg.
Consolidated Pet., No. 1, Torrance, Los Angeles	15- 4-14	4,841	sd. sh. drlg.
Texas Co., No. 9 Wilson, Torrance, Los Angeles	15- 4-14	3,535	sd. sh. drlg.
Wilson, R. K., No. 1 Cook, Torrance, Los Angeles	14- 4-14	3,891	sd. sh. drlg.
Standard Oil, No. 1 Martin, Torrance, Los Angeles	15- 4-14	4,950	O.S. drlg.
Superior Oil, No. 6, Torrance, Los Angeles	14- 4-14	4,948	rigging up
Imperial Gypsum, No. 1 De Witt, Torrance, L. Ang.	14- 4-14	4,896	sd. sh. drlg.
Imperial Gypsum, No. 2 Getty, Torrance, L. Angeles	14- 4-14	3,785	rigged up
C. C. M. O., No. 8, Torrance, Los Angeles	14- 4-14	3,890	will deepen
C. C. M. O., No. 23, Torrance, Los Angeles	14- 4-14	5,023	sd. sh. drlg.
Fisher, N., No. 1 Washburn, Torrance, Los Angeles	23- 4-14	5,147	pump. 35 b.d.
Berken Oil, No. 1 Star, Torrance, Los Angeles	15- 4-14	4,998	sd. sh. drlg.
Shell Oil, No. 94 Reyes, Dominguez, Los Angeles	33- 3-13	7,460	sd. sh. drlg.
Union Oil, No. 58 Callender, Dominguez, Los Angeles	33- 3-13	7,549	redrlg. 3,664
Union Oil, No. 8 Carson, Dominguez, Los Angeles	33- 3-13	7,780	flow. 510 b.d.
Barnsdall Oil, No. 3 Trust, Rosecrans, Los Angeles	18- 3-13	6,460	sd. sh. drlg.
Union Oil, No. 19 Rosecrans, Rosecrans, Los Angeles	18- 3-13	7,560	sd. sh. drlg.
Universal Consd., No. 3 Trust, Rosecrans, L. Angeles	18- 3-13	5,174	sd. sh. drlg.
Howard Oil, No. 1 Gordon, Rosecrans, Los Angeles	19- 3-13	6,596	redrlg. 5,295
Superior Oil, No. 8 Maxwell, Rosecrans, Los Angeles	19- 3-13	3,991	sd. sh. drlg.
H. B. Oil, No. 1 Stephens, Rosecrans, Los Angeles	19- 3-13	6,033	idle
Barnsdall Oil, No. 3 S.F., Newhall, Los Angeles	26- 4-17	4,692	sd. sh. drlg.
Royal Lands, No. 1, Ramona, Los Angeles	8- 4-17	615	sd. sh. drlg.
General Pet., No. 30 Ford, Wilmington, Los Angeles	4- 5-13	2,685	O.S. drlg.
General Pet., No. 39 Ford, Wilmington, Los Angeles	4- 5-13	4,101	flow. 1,126 b.d.
General Pet., No. 8 Harbor, Wilmington, Los Angeles	2- 5-13	2,960	O.S. drlg.
General Pet., No. 14 Harbor, Wilmington, Los Angeles	2- 5-13	3,920	O.S. drlg.
General Pet., No. 3-S.P., Wilmington, Los Angeles	2- 5-13	2,550	sd. sh. drlg.
Caleb Pet., No. 1 F.H., Wilmington, Los Angeles	32- 4-13	3,650	O.S. drlg.
Dunlap Oil, No. 12, Wilmington, Los Angeles	2- 5-13	3,855	flow. 2,495 b.d.
Hogan Pet., No. 2 Graham, Wilmington, Los Angeles	2- 5-13	3,080	flow. 206 b.d.
Hancock Oil, No. 4-A, Wilmington, Los Angeles	3- 5-13	2,297	sd. sh. drlg.
Hancock Oil, No. 11-B, Wilmington, Los Angeles	2- 5-13	4,043	O.S. drlg.
Hancock Oil, No. 16-B, Wilmington, Los Angeles	2- 5-13	3,412	O.S. drlg.
Hancock Oil, No. 17-C, Wilmington, Los Angeles	2- 5-13	2,650	O.S. drlg.
Hollywood Oil, No. 1 Baxter, Wilmington, L. Angeles	2- 5-13	3,047	O.S. drlg.
Macson Oil, No. 3-55-C, Wilmington, Los Angeles	32- 4-13	2,296	sd. sh. drlg.
Richfield Oil, No. 1-G, Wilmington, Los Angeles	2- 5-13	3,012	flow. 210 b.d.
Richfield Oil, No. 2-P.D., Wilmington, Los Angeles	2- 5-13	4,207	O.S. drlg.
Richfield Oil, No. 3-P.D., Wilmington, Los Angeles	2- 5-13	4,254	O.S. drlg.
Richfield Oil, No. 5-P.D., Wilmington, Los Angeles	2- 5-13	1,984	sd. sh. drlg.
Richfield Oil, No. 6-P.D., Wilmington, Los Angeles	2- 5-13	3,185	O.S. drlg.
Richfield Oil, No. 11-P.D., Wilmington, Los Angeles	2- 5-13	2,697	sd. sh. drlg.
Richfield Oil, No. 18-P.D., Wilmington, Los Angeles	2- 5-13	2,790	sd. sh. drlg.
Richfield Oil, No. 19-P.D., Wilmington, Los Angeles	2- 5-13	2,845	sd. sh. drlg.
Richfield Oil, No. 20-P.D., Wilmington, Los Angeles	2- 5-13	2,948	sd. sh. drlg.
Richfield Oil, No. 26-P.D., Wilmington, Los Angeles	2- 5-13	3,215	flow. 465 b.d.
Richfield Oil, No. 3-R.O., Wilmington, Los Angeles	2- 5-13	2,797	sd. sh. drlg.
Richfield Oil, No. 1-P.G., Wilmington, Los Angeles	2- 5-13	3,900	O.S. drlg.
Richfield Oil, No. 4-P.G., Wilmington, Los Angeles	2- 5-13	4,310	O.S. drlg.
Superior Oil, No. 8 B. B., Wilmington, Los Angeles	2- 5-13	3,901	O.S. drlg.
Termo Co., No. 3-D, Wilmington, Los Angeles	3- 5-13	3,900	flow. 3,000 b.d.
Universal Consd., No. 5 Newport, Wilmington, L. Ang.	2- 5-13	3,845	O.S. drlg.
Union Pacific, No. 73 Wilmington, Los Angeles	34- 4-13	3,850	O.S. drlg.
Union Pacific, No. 81, Wilmington, Los Angeles	4- 5-13	3,517	flow. 180 b.d.
Union Pacific, No. 3-E, Wilmington, Los Angeles	3- 5-13	3,920	flow. 2,160 b.d.
Union Pacific, No. 4-E, Wilmington, Los Angeles	3- 5-13	3,937	flow. 2,780 b.d.
Union Pacific, No. 5-E, Wilmington, Los Angeles	3- 5-13	3,952	flow. 1,350 b.d.
Union Pacific, No. 6-E, Wilmington, Los Angeles	3- 5-13	2,865	O.S. drlg.
Union Pacific, No. 7-E, Wilmington, Los Angeles	3- 5-13	2,161	sd. sh. drlg.
Union Pacific, No. 8-E, Wilmington, Los Angeles	3- 5-13	1,970	sd. sh. drlg.
Union Pacific, No. 2-P.D., Wilmington, Los Angeles	3- 5-13	1,894	sd. sh. drlg.
Pioneer Petrol, No. 1 Irvine, Wilmington, L. Angeles	26- 4-13	5,147	dry; abd.
Johnston Drlg., No. 1 Pico, Montebello, Los Angeles	5- 2-11	5,641	sd. sh. drlg.
St. Helens Pet., No. 25-M, Montebello, Los Angeles	2- 2-12	5,738	O.S. drlg.
St. Helens Pet., No. 26-M, Montebello, Los Angeles	2- 2-12	5,440	sd. sh. drlg.
St. Helens Pet., No. 27-M, Montebello, Los Angeles	2- 2-12	3,591	sd. sh. drlg.
Union Oil, No. 1 Paul Howard, Montebello, L. Angeles	2- 2-12	6,244	sd. sh. drlg.
Union Oil, No. 1 H.&S., Montebello, Los Angeles	2- 2-12	1,530	sd. sh. drlg.
Union Oil, No. 1 Wilcox, Montebello, Los Angeles	2- 2-12	6,120	sd. sh. drlg.
Standard Oil, No. 2 Harvey, Montebello, Los Angeles	2- 2-12	4,398	sd. sh. drlg.
McVicar & Rood, No. 1 Manz, Montebello, L. Angeles	2- 2-12	5,514	flow. 1,250 b.d.
Brookline Oil, No. 1 Drake, Montebello, Los Angeles	2- 2-12	3,992	sd. sh. drlg.
British American Oil, No. 1 Pico, Los Angeles	12- 2-12	4,487	sd. sh. drlg.
Monte Cristo Oil, No. 1, Monterey Park, Los Angeles	27- 1-12	5,220	sd. sh. drlg.
Colorado Oil, No. 19, Whittier, Los Angeles	22- 2-11	2,052	P.B. 2,021
Hilldon Oil, No. 2 Poole, N. Long Beach, Los Angeles	13- 4-13	4,069	O.S. drlg.
Hilldon Oil, No. 3 Poole, N. Long Beach, Los Angeles	13- 4-13	2,140	sd. sh. drlg.
Hilldon Oil, No. 1-8, N. Long Beach, Los Angeles	14- 4-13	5,150	sd. sh. drlg.
Signal Oil, No. 1 P.E., North Long Beach, Los Angeles	13- 4-13	3,760	redrlg. 3,190
Johnston Drlg., No. 33, Long Beach, Los Angeles	13- 4-13	3,597	sd. sh. drlg.
Exeter Oil, No. 2-A Clark, Long Beach, Los Angeles	19- 4-12	2,697	sd. sh. drlg.
Kramildon Oil, No. 1, Long Beach, Los Angeles	13- 4-13	6,875	sd. sh. drlg.
Dunlap Oil, No. 13, Long Beach, Los Angeles	30- 4-12	4,133	sd. sh. drlg.
Texas Co., No. 1 Wilson, Long Beach, Los Angeles	29- 4-12	3,465	sd. sh. drlg.
Winrock Oil, No. 1 Encinos, Long Beach, Los Angeles	29- 4-12	1,871	sd. sh. drlg.
Shell Oil, No. 44 Alamitos, Long Beach, Los Angeles	28- 4-12	5,300	P.B. 4,765
Richfield Oil, No. 5-B, Long Beach, Los Angeles	13- 4-13	3,050	sd. sh. drlg.
J. E. F. Oil, No. 1 Schaaf, Huntington, Los Angeles	36- 5-11	4,518	sd. sh. drlg.
Brea Canyon Oil, No. 48, Brea Canyon, Orange	2- 3-10	3,035	sd. sh. drlg.
Standard Oil, No. 2 Bastanchury, West Coyote, Orange	21- 3-10	5,937	cleaning out
Standard Oil, No. 65 Emery, West Coyote, Orange	24- 3-11	4,174	hd. sd. drlg.
Standard Oil, No. 66 Emery, West Coyote, Orange	24- 3-11	4,205	sd. sh. drlg.
Bartholomae Oil, No. 6 Sterns, East Coyote, Orange	22- 3-10	4,857	pump. 270 b.d.
Shell Oil, No. 1 Weisel, Anaheim, Orange	16- 4-10	1,101	sd. sh. drlg.
Millerand Pet., No. 1 Miller, Yorba, Orange	22- 3-9	1,277	sd. sh. drlg.
Oliver & Owen, No. 1 Anderson, Yorba, Orange	22- 3-9	1,363	P.B. 1,350
Pearl J. Oil, No. 1 Dobashi, Yorba, Orange	21- 3-9	1,804	O.S. drlg.
Mid-City Oil, No. 1 Day, Yorba, Orange	21- 3-9	5,777	will deepen
Burmah Oil, No. 1 Sloan, Yorba, Orange	21- 3-9	2,380	cmtd. 2,338
Kelmar Oil, No. 1 Yorba, Orange	16- 3-9	2,785	gr. sd. drlg.
Hancock Oil, No. 1 Day, Yorba, Orange	21- 3-9	3,568	P.B. 2,333
Berco Oil, No. 1 Milhous, Yorba, Orange	22- 3-9	1,750	will deepen

KANSAS

Week Ending May 14 (Descriptions are East unless marked otherwise)

Barton County

Armer & Vernon No. 1 Seyfert, NW SW NE sec. 3-17-13w. Drlg. 415 ft.
Champlin Ref. Co. No. 1 Reeves, SW sec. 29-20-14. Drlg. 2,218 ft.
Crown Pet. Corp. No. 1 Wolf, SE SW SE sec. 36-19-12w. Drlg. 180 ft.
R. E. Day et al No. 1 Felts, SE SE NE sec. 14-16-12w. S.D. 1,875 ft.
Deep Rock Oil Co. No. 1 Drake, NW SE sec. 4-17-13w. Cg. 3,778 ft.
Kessler O. & G. No. 1 Bowman, SW NE sec. 22-20-16w. Drlg. 1,500 ft.
Lario O. & G. Co. No. 1 Huline, CEL NE NE sec. 21-20-12w. Drlg. 2,975 ft.
Murfin et al No. No. 1 Rexroot, NW SE sec. 14-17-13w. S.O.&W. 3,150-75 ft.; T.D. 3,366 ft.; D.&A.
Price et al No. 1 Wondra, NW NE sec. 10-17-13w. T.D. 3,343 ft.; P.B. 3,342 ft.; acdz.; est. p. 190 B.O.P.D.
Sinclair Prairie Oil Co. No. 1 Frederick, SW SW SE sec. 16-16-11w. Arb. 3,322 ft.; T.D. 3,346 ft.; set 5-in. csg. 3,322 ft.; acd.; swb. 60 B.O. and 78 B.W. in 11 hrs.
Western Kansas O. & R. Co. and Republic Nat. Gas Co. No. 1 Linsner, SW SW SE sec. 3-17-13w. S.D. 215 ft.

Butler County

Bennett & Abels No. 1 Glass, SE SW NW sec. 14-25-3. Drlg. 1,000 ft.
T. S. Dustin No. 1 Miley, SE NW NE sec. 17-27-5e. C.O. 1,050 ft.

Chase County

T. D. Duffy No. 1 Leedy, NE NW NW sec. 26-22-9e. S.D. 2,325 ft.

Coffey County

Barner & Leiker No. 1 Knapp, SE SW NW sec. 27-22-14. Drlg. 200 ft.
Western Kans. O. & R. Co. No. 1 Knapp, SW SW NW sec. 27-22-14. Spd.

Cowley County

Hutchinson O. & G. Co. No. 1-A Ketchen, SW SE SE sec. 11-35-5. S.D. 1,450 ft.
Palmer Oil Corp. No. 1 Houser, SE NW SW sec. 13-30-3e. Drlg. 2,930 ft.
Smith et al No. 1 Wilson, SE SW NW sec. 9-33-6. Drlg. 2,448 ft.
Earl Wakefield No. 1 White, NW NE sec. 4-33-4e. T.D. 3,496 ft.; S.D.

Dickinson County

Fred Franks et al No. 1 Huffman, NW NW sec. 11-13-1e. Drlg. 790 ft.

Ellis County

Duwe & Farris No. 1 Hadley, SE NE SE sec. 12-11-18w. Arb. L. 3,329-32 ft.; 2,800 ft. O.I.H.; to test.

Ellsworth County

Cities Service et al No. 2 Schroeder "A," CNL SW sec. 29-17-9w. Drlg. 1,200 ft.

Finney County

Atlantic Ref. Co. No. 1 Nunn, C SE NE sec. 27-21-34w. Drlg. 4,457 ft.

Ford County

Sinclair Prairie Oil Co. No. 1 Young, CSL NE sec. 34-27-21w. T.D. 5,105 ft.; S.D.

Greenwood County

C. C. Whitaker et al No. 1 Bressner, NW SE sec. 8-26-13e. T.D. 1,498 ft.; 1,000,000 ft. gas est.

Jackson County

Haverback et al No. 1 Marble Bank, C NE NE sec. 26-9-14. T.D. 1,310 ft.; C.O.

Jewell County

Hollingsworth Bros. No. 1 Wolfe, NE SW SE sec. 14-4s-8w. S.D. 100 ft.

Kearny County

Tri-County Gas Co. No. 3 Campbell, NE SE NE sec. 19-25-35w. T.D. 2,679 ft.; acdz.

Lane County

Phillips Pet. Co. No. 1 Kees, C SE SE sec. 3-19-30w. T.D. 4,911 ft.; rebldg. wrecked drk.

McPherson County

Darrah et al No. 1 Decker, SW SW SE sec. 12-21-2w. Arb. 3,557-61½ ft., T.D.; P.B. 2,980 ft.; drld. to 3,018 ft.; shot; 2,600,000 ft. gas.

Meade County

Barnett et al No. 1 Adams, NW SE sec. 22-34-30w. S.D. 69 ft.

Ness County

Schoeppel & Elmore No. 1 Moses, C SW NW sec. 10-18-25w. Drlg. 3,900 ft.

Pratt County

Atlantic et al No. 1 Berg, NE NW NW sec. 22-26-14w. Drlg. 2,440 ft.
Atlantic Ref. Co. No. 1 Rice, NW NE NW sec. 11-28-15w. Arb. 4,717 ft.; cd. to 4,736 ft.

Reno County

Carey et al No. 1 McPheeters, NE NW sec. 22-26-8w. Drlg. 4,013 ft.
McCole et al No. 1 Mathews, SW NW NW sec. 15-24-10w. Arb. 4,078 ft.; T.D. 4,084 ft.; W.I.H.

Rice County

Jones & Hinkle No. 1 Wesseler, SE SE NW sec. 34-18-10w. Drlg. 1,825 ft.
Marylyn Oil Co. et al No. 1 Vincent, NW NW NE sec. 5-21-10w. Drlg. 2,110 ft.

Rooks County

Carter Oil Co. No. 1 Whitford, NE NE SE sec. 12-7-17w. Drlg. 380 ft.
Duwe & Farris No. 1 Sutor, SW SW NE sec. 28-9-19w. Set surf. pipe at 200 ft.
Graham et al No. 1 Fike, SW cor. sec. 9-9-17w. S.D. 3,384 ft.
Producers Oil Co. No. 1 Ham, SW SW NW sec. 25-7-19w. T.D. 1,000 ft.; C.O.

Rush County

Phillips Pet. Co. No. 1 John Kees, C SE SE sec. 3-19-20w. T.D. 2,500 ft.; S.D. for csg.

Russell County

Central Pet. Co. No. 1 Furthmeyer, SE sec. 22-14-15w. Drlg. 3,055 ft.
Cities Service No. 1 Becker, C W½ W½ SW sec. 21-14-14w. Drlg. 1,500 ft.
J. J. Hall No. 1 Landon, SW SE sec. 11-15-14w. Drlg. 1,095 ft.
S. L. Parks No. 1 Gorham, SW SW NE sec. 19-15-15w. H.F.W. 3,347-52 ft., T. D.; P.B. 3,120 ft.; perf. csg.; acd.; est. 100 B.O.P.D.
Phillips Pet. Co. No. 1 Miller, C NW SW sec. 29-13-14w. Fsg. 1,975 ft.
R. H. Shields No. 1 Anschutz, SW SE sec. 2-14-13w. S.D. 360 ft.
Smith & Unruh No. 1 Stielow, NW cor. sec. 32-11-14w. T.D. 2,552 ft.; S.D.
Web-Son O. & R. No. 1 Baxter, NW SE sec. 4-15-15w. Drlg. 917 ft.

Sedgwick County

Frank Hudson et al No. 1 Fulton, NE SE sec. 35-28-1e. Drlg. 1,858 ft.
Union O. & R. Co. et al No. 1 Howell, SW cor. sec. 6-29-1e. U.R. 2,843 ft.

Stafford County

Austin Drlg. Co. No. 1 Slade, NE NW sec. 35-25-12w. S.D. 955 ft.
Cardinal Oil Co. et al No. 1 Fischer, SW NW SW sec. 31-21-12w. T.D. 3,650 ft.; p. 78 B.O. in 2 hrs.; S.D.
I.T.I.O. and Cities Service No. 1 Smith, SE NE sec. 31-21-12w. T.D. 3,221 ft.; fair sat.
Stanolind Oil Co. No. 1 Depew, NW SE sec. 13-25-12w. Arb. 4,185 ft.; T.D. 4,208 ft.; D.&A.
Stanolind O. & G. Co. No. 2 Siefker, NE SE NE sec. 3-22-12w. R.U.S.T. 3,601 ft.

Sumner County

Colonial Oil No. 1 Miles, SE NE NE sec. 30-30-42. Drlg. 3,585 ft.
Hapenny et al No. 1 Evers, SE SE NE sec. 27-31-2e. O.W.D.D.; drlg. 1,960 ft.
Murphy et al No. 1 Tate, SE NW sec. 31-32-2e. Drlg. 2,910 ft.

Woodson County

Cleveland Oil Co. et al No. 1 Fidelity, SE SE NE sec. 34-25-15. T.D. 1,431 ft.; p. 10 B.O. in 24 hrs.
Hill & McClure No. 1 Kelley, NW SE SW sec. 22-26-14w. U.R. 686 ft.
Kilby et al No. 1 Skellenger, NE SE sec. 25-23-14. Drlg. 1,500 ft.
Wad McGinnis No. 1 State Bank, NW NE NE sec. 14-26-15. S.D. 1,150 ft.
Prunty Prod. et al No. 1 Tipton, NW NE sec. 31-25-14. Set 6-in. 1,510 ft.; Arb. 1,857 ft.; T.D. 1,955 ft.

OKLAHOMA

Week Ending May 14

NORTHERN OKLAHOMA

Beckham County

Mid-American Oil Co. No. 1-A Biscoe, SW cor. sec. 28-8-22w. T.D. 2,764 ft.; S.D.

Cleveland County

W. A. Delaney et al No. 1 Bugher, SE SE SW sec. 12-7-2w. T.D. 7,682 ft.; to run csg.

Cimarron County

Barnsdall Oil Co. No. 1 School Ld., C NW SE sec. 35-5-5ecm. Drlg. 3,640 ft.

Comanche County

Clyde Roach No. 1-A Green, SE SE SW sec. 2-1n-13w. T.D. 670 ft.; S.D.

Creek County

M. W. Mosier et al No. 1 Holcomb, SE SW NW sec. 19-18-8. T.D. 3,018 ft.; 2,000 ft. W.I.H. and S.S.O.; S.D.

Garfield County

J. E. Kendall et al No. 1-A State, SW cor. sec. 13-23-3w. Spd.

Garvin County

First Natl. Oil Co. No. 1 Butterly, NE NE SE sec. 22-1n-1e. T.D. 100 ft.; R. U.R.

Grady County

Gulf Oil Corp. No. 1 Thomas, SW NW NW sec. 14-4-5w. T.D. 11,415 ft.; pipe stuck.

Greer County

J. H. Everitt No. 1 Graumann, NE NW NW sec. 11-5-21w. T.D. 550 ft.; S.D.

Hughes County

Homer Doup et al No. 1 Bank, NE NE NW sec. 7-7-9. Drlg. 1,050 ft.
Phillaine Oil Co. No. 1 Morrison, SE SE SW sec. 13-9-10. T.D. 4,026 ft.; H.F.W., est. 25% oil.
Phillips Pet. Co. No. 1 Becker, NE NW SW sec. 8-5-10. T.D. 6,286 ft.; plug. 5,612 ft.; drld. out to 5,660 ft.; flwd. 287 bbls. in 24 hrs., cutting 15%.
Troup & Strickland No. 1 Brown, NW SW NE sec. 32-6-8. S.D. 660 ft.

Kay County

E. J. Shaffer et al No. 1 McKee, NE NW sec. 20-28-1w. T.D. 2,500 ft.; S.D.

Kiowa County

Anderson-Prichard Oil Corp. No. 1 Cribbs, sec. 28-7n-19w. T.D. 1,015 ft.; S.D.R.
Anderson-Prichard Oil Corp. No. 1 Johnson, sec. 10-7-20w. T.D. 1,200 ft.; U.R.
Gauntt & Baker No. 1 Parks, NW NW SW sec. 29-7-20w. S.D. 720 ft.

Lincoln County

Wilcox O. & G. Co. No. 1 Evans, SW SW NW sec. 21-14-6. T.D. 3,170 ft.; S.O.&G.; shot; D.&A.
Wilcox O. & G. Co. No. 1 Royer, SE SE NE sec. 18-14-6. T.D. 3,372 ft.; P.B. 3,240 ft.; waiting.

Logan County

Carter Oil Co. No. 1 Lydick, C E½ NW NE sec. 23-15-4w. Drlg. 6,769 ft.
Sinclair-Prairie No. 1 Crews, SW SW NE sec. 27-16-1e. Drlg. 5,045 ft.

Muskogee County

T. P. Clants No. 1 Jennings, NW NW NE sec. 8-13n-19. S.D. 810 ft.
Heydrick No. 1 Paschall, NE SE NW sec. 22-13n-19. S.D. 678 ft.

Murray County

Gilbreath & Dutton No. 1 Wolfe, C SE SW sec. 8-1-2. T.D. 2,522 ft.; S.D. for csg.

Okfuskee County

Alma Oil Co. No. 1 Martin, SW cor. sec. 4-12-7. T.D. 4,513 ft.; D.&A.
Burke-Greis Oil Co. No. 1 Capps, SE cor. sec. 7-13-7. T.D. 3,227 ft.; shot 2,818-48 ft.; 2,874 ft.; S.D. to D.D.
W. R. Ramsey et al No. 1 Parks, SE SE SE sec. 4-12n-7. Drlg. 2,235 ft.

Osage County

Chevalier-Simon No. 1 Osage, NW NW SW sec. 33-27-5. S.D. 2,385 ft.
I.T.I.O. Co. No. 1 Osage, SW SW NW sec. 7-24n-7. Drlg. 1,565 ft.
Norbia Oil Co. No. 1 Osage, SE cor. sec. 18-25-7. T.D. 2,784 ft.
Wah Sha She Oil Co. No. 1 Osage, NE NE NW sec. 4-28n-9. T.D. 1,485 ft.; rng. csg.

Pawnee County

Darby No. 1-A Lillie, NW NW SW sec. 1-22-3. Wilcox 4,136 ft.; T.D. 4,148 ft.
O. O. Owens et al No. 1 Riddle, C E½ E½ NW sec. 30-22-7. Drlg. 1,691 ft.

Payne County

R. L. Kemp et al No. 1 Rafferty, SE SE NE sec. 6-18-5. T.D. 3,666 ft.; H.F.O. fsg. at 3,240 ft.
Texas Co. No. 1 Logan, C W½ NW NW sec. 12-17-1e. T.D. 5,006 ft.; cmt. back to 4,974 ft.

Pittsburg County

Supreme Oil Corp. No. 1 Hickey, NW SW NW sec. 4-2n-15. S.D. 643 ft.
Supreme Oil Co. No. 1 Stevenson, SW SW SE sec. 27-3n-14. Drlg. 50 ft.

Pontotoc County

Caloma Oil Corp. No. 1 Brents, SE NE SW sec. 4-1n-6. T.D. 1,574 ft.; S.D.; lost circ.
Cowley et al No. 1 McCormick, NW SW SW SE sec. 27-2n-4e. T.D. 330 ft.
Farmers Mutual Royalty Corp. No. 1 Waite, NE NE NW sec. 9-5-5. Cg. 2,525 ft.
Loss Henry No. 1 Parker, SW SW SE sec. 17-4n-8. Drlg. 385 ft.
Jack Lynch et al No. 1-A Parker, SW SW SE sec. 17-4-8. T.D. 4,200 ft.; S.D.R.
Union Dev. Co. No. 1 Abbott, SW NW NE sec. 34-3-6. T.D. 3,320 ft.; S.D.

Pottawatomie County

Pure Oil Co. No. 1 Lack et al, SE SW NW sec. 3-6-5. T.D. 3,157 ft.; P.B. 3,050 ft.; drlg. cmt. 3,179 ft.
Shell Pet. Corp. No. 1 Boley, SE SE SW sec. 5-11-6. Drlg. 4,442 ft.

Seminole County

W. A. Delaney et al No. 1 Swan, SE SW SW sec. 18-6-6. Shot at 2,675 ft.; flwd. 101 B.O. in 24 hrs. while swdg. pipe.
Magnolia Oil Co. No. 1 Merrell, SW SE NE sec. 34-6-5. T.D. 3,241 ft.; D.&A.
W. B. Pine No. 1 Wright, SE SE NE sec. 16-6-6. P.B. 3,576 ft.; drlg. out plg.
Smith & Greer No. 1 Coker, NW NE NE sec. 25-7-5. T.D. 3,014 ft.; swb. 25 B. O. and 25 B.W. in 24 hrs.
Villines et al No. 1 Reed, NE NE NE sec. 35-7n-5. T.D. 2,983 ft.; W.O.C.

Washita County

L. B. McWhirter No. 1 fee, NW SW SW sec. 34-8-19w. T.D. 2,147 ft.; fsg.

SOUTHERN OKLAHOMA

Atoka County

Amerada Pet. Corp. and Stanolind O. & G. Co. No. 1 Ridgway, NE cor. sec. 24-3s-9. P.B. 3,325 ft.; drld. to 3,420 ft.; bailing 1 B.O. and 1 gal. oil P.H.
C. M. Sheldon and Gardner Pet. Co. No. 1 Lee, NE NW SW sec. 2-4s-10e. Drlg. 3,020 ft.

Carter County

Texas Co. No. 1-B Cathey, SE NE NE sec. 6-5s-1w. T.D. 5,685 ft.; P.B. 5,477 ft.; 3,800 ft. F.I.H.; C.O.

Choctaw County

Dr. Hardy et al No. 1 fee, SE SE NW sec. 21-7s-15. Drlg. 310 ft.
Clyde Ross et al No. 1 Hardy, SE SE NW sec. 21-7s-15. Drlg. 450 ft.

Cotton County

Jim Turner et al No. 3 Collins, SE SE NE sec. 18-4s-10w. Loc.

Creek County

L. B. Jackson No. 1 Berryhill, NW NW NW sec. 1-18n-10. Drlg. 250 ft.

Jefferson County

J. Roy Stebbins et al No. 1 Bourland, SW SW SE sec. 24-7s-4w. Drlg. 2,210 ft.

Love County

Sinclair Prairie Oil Co. No. 1 Peabody, NE cor. sec. 35-6s-2w. T.D. 5,961 ft.; fsg.

Marshall County

E. W. Hughes Drlg. Co. et al No. 1 Vittitoe, C NE SE sec. 11-5s-4e. T.D. 6,535 ft.; S.D.

Stephens County

Coline Oil Co. No. 1 Johnson, C SW SE SE NE sec. 1-2n-8w. T.D. 10,000 ft.; 9,050 ft.; made several hd. flws., 37-grav. oil. S.I.O.
B. F. Lundy et al No. 1 Oxford, NE NE SW sec. 26-1s-4w. Drlg. 3,850 ft.

Tillman County

Smith No. 2 Hammell, NE NW NW sec. 6-5s-15w. T.D. 2,000 ft.; S.D.

ARKANSAS

Bradley County

Phillips Pet. Co. No. 1 Marsden, sec. 9-16w-11s. Will core 5,090-95 ft. and D. S.T.

Columbia County

Standard Oil Co. of La. No. 2 Crone, NW cor. SE SW sec. 8-16-22. Top anhy. 7,115 ft.; top L. 7,224 ft.; set 7-in. csg. 7,218 ft.; ran Schlumberger.
Standard Oil Co. of La. No. 1 W. P. Phillips et al. 660 ft. N and W, C sec. 15-17-19. D.S.T. 7,351-95 ft.; ¼-in. ck.; 3 min.; W.P. 45 lbs.; closed tool and reseated; open 2 min. at 75 lbs. when bypass valve cut out; rec. 1,000 ft. gas-cut mud; cd. soft oil. L.; gas and dist. odor 7,419 ft.; ran Schlumberger and will core 100 ft.
Standard Oil Co. of La. No. 1 Waters et al, 660 ft. SE cor. SE SE sec. 7-16-22. Sat. L. 7,242 ft.; cd. 7,192-7,212 ft.; top hd. L. 7,195 ft.; top soft L. 7,197 ft.; Set 7-in. csg. 7,193 ft.; T.D. 7,259 ft.; comp.; 200 B.P.D.; ⅛-in. ck.; C.&T. P. 700 lbs.

Hempstead County

H. D. Easton et al No. 1 LaGrone, sec. 5-12-26. S.D. 3,100 ft.; W.O.

Lafayette County

Standard Oil Co. of La. No. 2 McKean, 660 ft. SW cor. SW SE sec. 7-16s-22w. M.I.M.

Little River County

Joe G. Strahan et al No. 2 Dierks Lbr. Co. Top L. 2,425 ft.; S.D. 2,497 ft.

Lonoke County

J. F. Russell No. 1 Gunter, sec. 17-5n-10w. Drlg. 595 ft.

Miller County—Rodessa

F. W. Burford No. 1 Mitchell, sec. 11-20-28. Drlg. L.&rd. bds. 4,820 ft.
F. W. Burford No. 2-B Thomas, sec. 12-20-28. Drlg. hd. L. 6,027 ft.
J. L. Caracas No. 1 Mitchell, SW cor. NW NW sec. 11-20-28. Rmg. to bttm. 6,178 ft.
F. F. Earles No. 1 General American Life Ins. Co., sec. 20-14-26. Set 13⅜-in. csg. 225 ft.
Gerhig Co. of Ark. No. 2-B Mitchell, sec. 11-20-28. Drlg. anhy. 5,692 ft.
G. C. Grasty No. 2 Mitchell, sec. 3-20-28. Comp.; 16 B.P.H.; 1-in. ck.; T.P. 50 lbs.; C.P. 625 lbs.; perf. csg. 6,154-68 ft.; 7-in. csg. 6,173 ft.; T.D. 6,177 ft.
Sam Killingsworth No. 1 Greer, sec. 11-20-28. Drlg. sh. 3,100 ft.
John Kraker No. 1-C Mitchell, sec. 10-20-28. Drlg. sh.&L. 5,541 ft.
B. B. Orr No. 2 Mitchell, sec. 10-20-28 Drlg. anhy.&sh. 5,701 ft.
Red Iron Drlg. Co. No. 1 Mitchell, sec. 2-20-28. Drlg. 50 ft.
I. Roosth No. 1 Capps, sec. 10-20-28. Sat. L. 6,115-38 ft.; set 5½-in. csg. 6,100 ft.; T.D. 6,140 ft.; acdzd. 3,000 gal.; comp.; 450 B.P.D.; ½-in. ck.; T.P. 0 lb.; C.P. 500 lbs.
Texarkana Drlg. Co. No. 1 Capps, sec. 10-20-28. Drlg. sh.&L. 3,998 ft.
Texas Canadian Oil Corp. No. 2 Thomas, NE cor. NW SE sec. 12-20-28. Reperf. 6,108-16 ft., 6,125-32 ft., and 6,146-53 ft.; swbd. approx. 25 bbls. oil; treated with 3,000 gal.; T.D. 6,156 ft.; swbg. 18 bbls. every 3 days.

Nevada County

Steele & Weber No. 1 Boswell, sec. 5-14-20. Set 10-in. csg. 63 ft.
Bruce E. Wallace No. 2 Haynie, SE cor. SE NE sec. 5-14-21. Sdy. sh. 1,194-1,204 ft.; tstd. inud, S.W. and oil 1,198-1,214 ft.; 30 min.; W.O.; T.D. 1,214 ft. set 6-in. csg. 1,198 ft.; swbd. est. 10 bbls. oil; W.O.

Pike County

Bruce E. Wallace No. 1 Tilyeu, sec. 26-8s-24w. S.D. 330 ft.

Pulaski County

Coker Oil Corp. No. 1 Stone, sec. 36-3n-11w. R.U
A. L. Kitselman, No. 2 A. L. Kitselman Jr., SE SE SW sec. 2-1s-13e. S.D. hd. rk. 2,750 ft.

Union County—Schuler

Alice Sydney Oil Co. No. 2 Powledge, sec. 7-18-17. Drlg. rd. sdy. sh. 7,215 ft.
Alice Sydney Oil Co. No. 3 Powledge, SW cor. SE SE sec. 7-18-17. Drlg. rd. and gr. sh. 7,070 ft.
E. M. Jones et al No. 2-A Murphy, sec. 19-18-17. T.D. 7,528 ft.; rmg.
E. M. Jones No. 1 Rogers, SW SW sec. 16-18-17. Set 16-in. csg. 111 ft.
Lion Oil Ref. Co. No. 1 Marcus, sec. 18-18-17. Drlg. rd. and gry. sh. 6,289 ft.
Lion Oil Ref. Co. No. 3 Marine Oil Co., sec. 17-18-17. Top Jones sd. 7,516 ft.; set 7-in. csg. 7,614 ft.; T.D. 7,622 ft.
Lion Oil Ref. Co. No. 2 Mayfield, Lot 2, sec. 18-18-17. Drlg. rd. and gr. sh. 5,884 ft.
Lion Oil Ref. Co. No. 3 Mayfield, sec. 18-18-17. Drlg. rd. and gr. sh. 4,535 ft.
Lion Oil Ref. Co. No. 1 Edna Morgan, NE cor. Lot 5, NW sec. 18-18-17. Drlg. rd. sdy. sh. 7,456 ft.
Lion Oil Ref. Co. No. 2 Edna Morgan, sec. 18-18-17. Drlg. rd. and gry. sh. 6,975 ft.
Lion Oil Ref. Co. No. 6-B Edna Morgan, sec. 18-18-17. R.U.
Lion Oil Ref. Co. No. 1 Nelson, sec. 18-18-17. Set 10-in. csg. 2,260 ft.; W.O.C. 2,276 ft.
Marine Oil Co. No. 5 fee, sec. 17-18-17. Drlg. rd. and gr. sh. 6,924 ft.
Marine Oil Co. No. 6 fee, sec. 17-18-17. Drlg. rd. and gry. sh. 6,622 ft.
Phillips Pet. Co. No. 3 Justiss, Lot 6, sec. 18-18-17. Top Jones sd. 7,506 ft.; top L. 7,609 ft.; cd. 60 ft. sat. L. in Reynolds L.; drlg. hd. dense L. 7,856 ft.
Phillips Pet. Co. No. 3 Marine Oil Co., sec. 20-18-17. Cg. 7,510 ft.
Phillips Pet. Co. No. 4 Marine Oil Co., sec. 20-18-17. Top Jones sd. 7,516 ft.; cg. 7,538 ft.
Phillips Pet. Co. No. 5 Marine Oil Co., sec. 20-18-12. Drlg. rd. and gr. sh. 6,692 ft.
Phillips Pet. Co. No. 3 Marks, C Lot 2, sh. 5,470 ft.

Union County—Other

Ark. Southern Oil Corp. No. 3-A Simmons, sec. 15-18-13. Set 10-in. csg. 162 ft.
J. R. Lockhart No. 1 Raulston, sec. 12-17-14. R.U.; W.O.
Joe Modisette et al No. 1 Union Sawmill Co., sec. 8-18-12. R.U.
W. D. Wingfield, Tr. No. 2 Kidd Est., SE cor. NW SW sec. 15-18-13. Sd. S.D. 2,257-2,300 ft.; set 6-in. csg. 2,250 ft.; T.D. 2,300 ft.; W.O.S.R.

LOUISIANA

NORTH LOUISIANA PROVEN
N. LOUISIANA WILDCATS

Bienville County

Gulf Ref. Co. No. 1 Goodpine, sec. 25-14-8. Drlg. L.&sh. 9,725 ft.
Producers O. & G. Co. No. 1 Locke, NE cor. sec. 9-15-10. O.W.W.O.; old T.D. 2,960 ft.; rmd. to 800 ft.; S.G.; hole cleaned out; sat. L. 2,952-53 ft.; set 8⅝-in. csg. 2,947 ft.; T.D. 2,962 ft.; tstd. dry; arng. to deepen.

Bossier Parish

Premier Inv. Co. No. 1 McDade, SE SW NE sec. 28-19-11. S.D. 2,264 ft.
Sloan, Lloyd et al No. 1 Sherrill, sec. 12-19-12. S.D. 780 ft.
Triangle Drlg. Co. No. 4-A Skannel, NE SW sec. 13-17-12. Set 5½-in. csg. 3,009 ft.; T.D. 3,140 ft.; tstg.
Union Prod. Co. No. 2 Thigpen-Herold, sec. 13-17-12. T.D. 3,162 ft.; D.S.T. 2-980-3,030 ft.; rec. 400 ft. oil and 120 ft. mud and oil in 21 min.; set 7-in. csg. 3,109 ft.; P.B. 3,132 ft.; treated 2,000 gal. acd. and tstg.

Caddo Parish

Carroll et al No. 1 Hart, NW sec. 26-21-16. R.U.
L. I. Davis No. 4 Stiles, sec. 7-20-15. Drlg. 220 ft.
J. P. Driscoll No. 2 Sattelite, sec. 10-20-15. Set 6-in. csg. 2,175 ft.; T.D. 2,189 ft.; fsg. for swb.
W. D. Flynn No. 4 Natalie, SE cor. sec. 10-21-16. Set 7-in. at 998 ft.; W.O.; T.D. 1,027 ft.
J. T. Humphrey No. 1 Caddo Levy Bd., sec. 26-21-16. Cg. 2,245 ft.
Magnolia Pet. Co. No. 25 Dillon Hrs., sec. 23-21-15. Set 7-in. csg. 1,460 ft.; comp.; 45 B.P.D.; pmp.; 3,000 gal. acd.; T.D. 1,650 ft.
Midfield Oil Co. No. 1 Muslow, C sec. 6-20-15. Cg. 1,350 ft.
Petroleum Heat & Power Co. No. 1 Wemple, NW cor. sec. 14-20-15. Set 6-in. csg. 2,185 ft.; S.D. 2,605 ft.
G. R. Stevens No. 3 Hart, sec. 22-21-16. Set 6-in. csg. 997 ft.; W.O.S.R. 1,003 ft.
Tippett Oil Corp. No. 1 Lewis, sec. 27-20-16. Set 6⅝-in. csg. 1,355 ft.; tstd. dry 1,628 ft.; D.&A.
Triple M Oil Co. No. 1 Boisseau, sec. 34-21-16. S.D.; W.O. 1,888 ft.
G. H. Vaughn No. 1 Stiles, sec. 21-21-16. Drlg. sh. 520 ft.

Caldwell Parish

E. T. Oakes et al No. 1 Kyles, sec. 18-11-3e. Set 12-in. csg. 467 ft.

Catahoula Parish

G. C. Foster et al No. 1 Peck, sec. 38-10-8e. Cg. 645 ft.

Claiborne Parish

Atlantic Ref. Co. No. 1-C Bean, sec. 32-21-4. Drlg. L.&sh. 4,955 ft.
Harry Fetiades No. 3 King, sec. 11-20-5. Drlg. sh.&L. 5,158 ft.
Harry Fetiades No. 4 King, sec. 10-20-5. Drlg. sh.&L. 5,215 ft.
Gulf Oil Corp. No. 3 Patton, sec. 11-20-5. Drlg. L.&sh. 4,878 ft.
T. L. James No. 3 Fowler, C NW SE sec. 32-21-4. Set 5½-in. csg. 5,183 ft.; tstg. 5,205 ft.; comp.; 52 B.P.H.; ½-in. ck.; T.P. 225 lbs.; C.P. 250 lbs.
Love Pet. Co. No. 1 English, sec. 29-21-4. Drlg. L. 4,685 ft.
C. H. Lyon et al No. 1-A Lloyd, sec. 2-20-5. Comp.; 13 B.P.H.; 1-in. ck.; T.P. 25 lbs.; set on pkr.; 5½-in. csg. set 5,204 ft.; T.D. 5,223 ft.
Magnolia Pet. Co. No. 1 Lloyd, NW SE sec. 2-20-5. Sat. L. 5,252-60 ft.; set 7-in. csg. 5,252 ft.; T.D. 5,270 ft.; comp.; 337 bbls. in 20 hrs.; ½-in. ck.; T.P. 210 lbs.; C.P. 75 lbs.;
Magnolia Pet. Co. No. 2 Lloyd, sec. 2-20-5. Set 10¾-in. csg. 866 ft.
Morelock & Bevil No. 1 Kilgore, sec. 12-20-5. Drlg. 3,965 ft.
W. H. North et al No. 1 Patton, sec. 12-20-5. Drlg. sh. 3,232 ft.

Scouts Oil Corp. No. 1 Fowler, sec. 28-21-4. Drlg. L. 5,078 ft.
Sells Pet. Co. No. 1-A Patton, sec. 11-20-5. Set 5½-in. csg. 5,318 ft.; tstg.
Skelly Oil Co. No. 1 Enlee, sec. 28-21-4. Set 9⅝-in. csg. 845 ft.
Sklar Oil Corp. No. 1 Kilgore, sec. 11-20-5. Sat. L. 5,281-86 ft.; rng. csg. 5,306 ft.
Sloan & Zook No. 7 Patton, sec. 1-20-5. Drlg. L. 4,210 ft.
Texas Canadian Oil Co. No. 1 Fowler, sec. 32-21-4. Drlg. L. 3,520 ft.
Texas Co. No. 1 Tippett, sec. 33-21-4. Sat. L. 5,303-10 ft.; set 5-in. csg. 5,293 ft.; tstg. 5,318 ft.; acdz. and swbg.
W. A. Thorpe No. 1 Fowler, sec. 33-21-4. Cg. 5,285 ft.
Union Prod. Co. No. 2 Brownfield, sec. 5-19-5. T.D. 10,759 ft.; hole off 5 deg. P.B. 10,561 ft.
Union Prod. Co. No. 1 Coleman, sec. 43-7-9e. Sd. 5,705-13 ft.; S.O.; rmg. for D.S.T.
Weaver Oil Corp. No. 2 Edmonds, sec. 16-20-5. S.D. 5,437 ft.
Weaver-Perry Oil Co. No. 1 Patton Est., sec. 11-20-5. Drlg. 2,460 ft.

Concordia Parish

Morrison & Co. No. 1 Winston, sec. 43-7-9e. Cg. 875 ft.

De Soto Parish

S. S. Alexander No. 1 Stoll, NE cor. sec. 5-12-16. O.W.W.O.; old T.D. 6,002 ft.; set short string 5½-in. csg. 5,479 ft reperf. 5,420-40 ft.; tstg. S.W. 5,440 ft. and recmtd. perf.
Hunter Co. No. 1 Parker, sec. 26-12-16. Set 9⅝-in. csg. 1,380 ft.; well blew out at 2,912 ft.; drlg. L.&sh. 4,104 ft.
La. Seaboard Oil Ref. Co. No. 1 Lawrence, sec. 36-12-14. Set 8¼-in. csg. 2,031 ft.; tstd. dry; drlg. 2,654 ft.
Pet. Heat & Power Co. No. 1-B Kavanaugh, sec. 12-11-12. S.D. 1,654 ft.; rep. rig.
Pet. Heat & Power Co. No. 1 Rives, sec. 20-12-11. Cg. sh. 2,753 ft.
Pet. Heat & Power No. 1 Williams, W R., NW NE sec. 13-11-12. (Cor.); D.S T. 2,800-18 ft.; S.G.; 7-in. csg. set 2,800 ft.; tstg. 2,827 ft.; W.O.; T.D. 2,827 ft.; tstd. S.G.; arng. test 2,827 ft.
Texas Co. No. 2 White, SW NE sec. 24-12-12. Set 4½-in. csg. 835 ft.; tstd. dry; S.G.; rng. sd. pmp.; T.D. 890 ft.
Texas Co. No. 1 Thigpen, sec. 29-12-11. Drlg. 2,726 ft.

Franklin Parish

Southern Star Pet. Co. No. 3 Grayson, sec. 36-12-6e. Drlg. sh. 1,892 ft.

Grant Parish

K-M Pet. Co. No. 1 Holmes, sec. 20-9-1e. S.D. 850 ft.
C. L. Thompson No. 1 McNeely Est., NE cor. sec. 10-6-3w. Drlg. sh. 1,920 ft.; top Cockfield 1,054 ft.

La Salle Parish

Alexander & Jarvis No. 1 Tremont, sec. 2-9-1e. Set 6-in. csg. 1,490 ft.; T.D. 1,493 ft.
Cupples et al No. 1 King, sec. 25-10-1e. Set 5⅞-in. csg. 1,540 ft.; S.D. 1,549 ft.

Natchitoches Parish

Roy Raines et al No. 1 Prudential Life Ins. Co., sec. 22-10-9w, O.W.W.O.; R. U. to deepen.
W. P. Ryan et al No. 1 Lambert, sec. 4-8-9. Drlg. sdy. L. 2,750 ft.

Red River Parish

Glassell & Whitehurst No. 1 LeLong, NE NW NE sec. 25-12-11. S.D. 2,874 ft
R. M. Hutchins No. 1 Sample, sec. 11-14-11. Drlg. sh. 800 ft.

Sabine Parish

W. L. McClanahan No. 1 Frost Lbr. Co., sec. 22-9-13. R.U.
Major Oil Co. No. 2 Henry, sec. 12-7-13. Set 7-in. csg. 2,134 ft. treated with 3,000 gal. acd.; tstg.; T.D. 2,444 ft.
H. N. Morris No. 1 Irving & Bishop, C NW NW sec. 18-7-12. Recmtd. 6-in. csg.; T.D. 2,495 ft.
Plymouth Oil Corp. No. 1 Kezerle, sec. 3-7-13. Tstd. S.W. 2,494 ft.; will P.B.
W. L. Posey No. 1-A Ramirez, sec. 12-7-13. Drlg. 1,099 ft.
Republic Gas Co. No. 1 Whitney Corp., sec. 8-9-13. S.D. hd. sh.&strks. L. 8,929 ft.
Royal O. & G. Co. No. 3-A Frost Lbr. Co., C NE SE sec. 19-9-13. Set 7-in. csg. 1,540 ft.; T.D. 1,961 ft.; tstg.
Sutton-Zwolle Oil Co. No. 1 Sabine Lbr. Co., SE cor. NW NE sec. 23-7n-14w. Cg. sh.&L. 4,090 ft.
J. J. Watson No. 1 Sabine, sec. 12-7-13. Set 6-in. csg. 2,145 ft.
Lee Whitehurst No. 6 Frost Lbr. Co., sec. 29-9-13. Set 6⅝-in. csg. 1,589 ft.; treated with 2,000 gal. acd.; tstg.

Tensas Parish

H. V. Schumacker No. 4 Mount Plantation, sec. 39-11-12e. S.D. 1,775 ft.

Union Parish

Standard Oil Co. of La. No. 1 Frost Lbr., sec. 14-21-1e. Cg. L.&sh. 9,439 ft.

Webster Parish

S. W. L. Backus No. 4 Pardee, sec. 3-22-11. Drlg. sh. 1,675 ft.
Fohs Oil Co. No. 1 Crichton, sec. 33-21-10. Drlg. sh. 6,670 ft.
Hunt Oil Co. No. 6 Babb, C NE SW sec. 14-21-10. Drlg. sh. 7,920 ft.
Hunt Oil Co. No. 7 Babb, C NW SE sec. 14-21-10. Drlg. sh.&L. 5,918 ft.
Hunt Oil Co. No. 9 Davis, sec. 14-21-10. Drlg. sh.&L. 4,084 ft.
Hunt Oil Co. No. 3 Webb, C NW SW sec. 13-21-10. Drlg. sh. 5,447 ft.
Magnolia Pet. Co. No. 1 Crichton Unit, sec. 33-21-10. Drlg. sh. 1,820 ft.
Magnolia Pet. Co. and Ray Drlg. Co. No. 1 Stewart-Crichton, sec. 33-21-10. Drlg. sh.&L. 2,550 ft.
Magnolia Pet. Co. No. 1 Robbins Unit, sec. 21-21-10. Drlg. sh.&L. 3,825 ft.
Magnolia Pet. Co. No. 1 Sexton Unit, NW SE sec. 32-23-9. Cd. Bodcaw sd.; no show; cd. sd. 8,293-8,310 ft.; gas odor; slight show gas and dist.; cg. hd. sdy. L. 8,599 ft.; ran Schlumberger 8,521 ft.; cd. sd. 8,899-8,906 ft.; gas odor; sd. at 9,007 ft.; dist. odor; drlg. bl. sh. 10,096 ft.
Midstates Oil Corp. No. 1 Welori Lbr. Co., C NW NW sec. 3-20-10. Top Tr. Pk. 6,029 ft.; no Holloway sd.; set 9⅝-in. csg. 6,121 ft.; drlg. rd. bds. 7,192 ft.
Morgan et al No. 1-A Hope, C NW NW sec. 25-21-10. Drlg. sdy. sh. 7,553 ft.
Ohio Oil Co. No. 3 Bodcaw, Acct. 4, sec. 28-21-10. Drlg. hd. sd. 7,599 ft.
Ohio Oil Co. No. 50 Bodcaw, Acct. 3, sec. 34-21-10. Drlg. L.&sh. 4,720 ft.
Ohio Oil Co. No. 1 Crutsinger, NE cor sec. 35-2-10. Comp.; 612 B.P.D. dist.; est. 5,000,000 ft. gas; ⅜-in. ck.; Bodcaw sd. 8,434-74 ft.; T.P. 2,450 lbs.; C.P. 2,600 lbs.; 7-in. at 8,440 ft.; T.D. 8,487 ft.
Ohio Oil Co. No. 1 Gray, NW cor. SE NW sec. 28-21-10. Drlg. hd. sd. 7,406 ft.
Ohio Oil Co. No. 24 Gray, NE cor. sec. 35-21-10. Drlg. hd. sd. 7,370 ft.
Ohio Oil Co. No. 1 A. H. Gray, Acct. 3, sec. 26-21-10. Drlg. rd. sh. 5,730 ft.
Ohio Oil Co. No. 1 Jackson, sec. 27-21-10. No Holloway sd.; set 9⅝-in. csg. 5,600 ft.; drlg. L.&sh. 6,636 ft.
Ohio Oil Co. No. 1 Sandlin, sec. 27-21-10. No Holloway sd.; set 9⅝-in. csg. 5,574 ft.; drlg. hd. sd. 6,721 ft.
Ohio Oil Co. and Union Prod. Co. No. 1 Tillman-Gleason, sec. 28-21-10. Drlg. sh. 2,500 ft.
Oliphant No. 3 Banks, sec. 34-21-10. Top Tr. Pk. 5,797 ft.; drlg. sdy. sh. 7,681 ft.
A. G. Oliphant No. 2 Hodges, C NW SE sec. 34-21-10. 9⅝-in. csg. 5,689 ft.; tstg. 5,859 ft.
A. G. Oliphant No. 1 Stewart, sec. 33-21-10. Holloway sd.; no show; drlg. sh. 8,086 ft.
Stanolind O. & G. Co. No. 1 Pardee Co., SW NE sec. 36-21-10. Drlg. 8,152 ft.
Union Prod. Co. No. 1 Josey, sec. 27-21-10. Drlg. sh.&L. 4,877 ft.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co. No. 1 Franciol, sec. 67-12s-3e. R.U.
Continental Oil Co. No. 1 Hebert, sec. 67-12s-3e. 10¾-in. csg. 1,510 ft.; T.D. 7,448 ft.; D.S. stk.; fsg.; P.B. 7,301 ft.; to sdtrk.; drlg. sh. 8,867 ft.
Continental Oil Co. No. 1 Motty, sec. 67-12s-3e. T.D. 8,242 ft.; P.B. to test.

Anse La Butte—St. Martin Parish

Butte Oil Co. No. 2 Billeaud, sec. 117-9s-5e. R.U.
Paul Fly et al No. 1 Moresi, sec. 118-9s-5e. Drlg. 560 ft.

Baton Rouge—East Baton Rouge Parish

Wm. Helis No. 3 La. State, sec. 65-7s-1w. Drlg. sh.&L. 7,253 ft.

Bay St. Elaine—Terrebonne Parish

F. J. LeBlanc No. 2 Wurzlow, sec. 17-22s-18e. S.D. 816 ft.
Texas Co. No. 17 State, sec. 18-22s-18e. Drlg. sdy. sh.&sd. 4,079 ft.

Bayou Blue—Iberville Parish

Humble O. & R. Co. No. 6 Wilbert Sons Lbr. Co., sec. 66-9s-11e. T.D. 6,991 ft.; 7-in. csg. 6,982 ft.; perf. csg. 6,934-47 ft.; reset screen; tstg.

Bayou De Allemands—St. Charles Parish

Amerada Pet. Corp. No. 1 Gheens Realty Co., sec. 56-15s-20e. T.D. 7,010 ft.; P.B. 6,398 ft.; sdtrkd.; drlg. sd. 6,411 ft.
Amerada Pet. Corp. No. 4 State, sec. 13-15s-20e. 13⅜-in. csg. 1,976 ft.; drlg. sh. 6,827 ft.
Amerada Pet. Corp. No. 2 St. Charles Ld. Co., sec. 13-15s-20e. Drk.

Big Lake—Cameron Parish

Union Sulphur Co. No. 2 Miami Corp., sec. 19-12s-8w. T.D. 9,439 ft.; P.B. to 6,500 ft.; sdtrkd.; top oil sd. 6,775 ft.; recvd. S.W. on D.S.T.; S.D.

Black Bayou—Calcasieu Parish

Shell Pet. Corp. No. 41 Watkins, sec. 17-12s-12w. T.D. 5,199 ft.; P.B. 4,562 ft.; flwd. 269 B.P.D.; 15/64-in. ck.

Caillou Island—Terrebonne Parish

Texas Co. No. 29 State, sec. 17-23s-20e. Loc.

Cameron Meadows—Cameron

Burton-Sutton Oil Co. No. 23 School Ld., sec. 16-14s-13w. T.D. 5,786 ft.; 7-in. csg. 5,323 ft.; tstd. S.W.; P.B. to 2,950 ft.; failed to flow; washing.
Burton-Sutton Oil Co. No. 24 School Ld., sec. 16-14s-13w. Drk.
Burton-Sutton Oil Co. No. 25 School Ld., sec. 16-14s-13w. Drlg. sh.&L. 3,540 ft.
Magnolia Pet. Co. No. 22 Cameron Meadows, sec. 21-14s-13w. T.D. 4,242 ft.; 9⅝-in. csg. 4,242 ft.; perf. csg. 4,221-30 ft.; flwg. P.L. oil; went dead; P.B. 4,232 ft.; perf. csg.

Cheneyville—Rapides Parish

Amerada Pet. Corp. No. 5 Well Ld. Co., sec. 53-1s-2e. Drlg. sh. 1,810 ft.
Texas Co. No. 3 Well Ld. Co., sec. 53-1s-2e. Drlg. sh. 6,051 ft.

Charenton—St. Mary Parish

Commerce Oil Co. No. 1 Daloh Parro, sec. 31-13s-10e. Cd. oil sd. 6,658-95 ft.; T.D. 6,702 ft.; 9⅝-in. csg. 6,695 ft.
Pan American Prod. Co. No. 5 Laws Realty Co., sec. 25-13s-9e. R.U.
Pan American Prod. Co. No. 3 South Coast Corp., sec. 30-18s-10e. T.D. 7,833 ft.; P.B. 7,228 ft.; sdtrkd.; T.D. 8,446 ft.; P.B. 6,117 ft.; sdtrkd.; T.D. 7,952 ft.; abd.
Pan American Prod. Co. No. 7 Veeder, sec. 25-13s-9e. T.D. 1,130 ft.; 7-in. csg. 1,124 ft.; W.O.C.

Choctaw—Iberville Parish

La. Crusader Oil Co. No. 2 Schwing, sec. 29-8s-11e. Drlg. sd.&L. 7,729 ft.

Creole—Cameron Parish

Superior Oil Co.-Pure Oil Co. No. 2 State, Gulf of Mexico. R.U.R.; driving piling.

Darrow—Ascension Parish

Darrow Oil Co. No. 1 Dennis, sec. 68-10s-2e. T.D. 2,150 ft.; S.D.
Humble O. & R. Co. No. 17 Community, sec. 33-10s-2e. T.D. 6,584 ft.; perf. csg. 6,064 ft.; made sqz. job; drlg. out cmt. to 6,616 ft.; perf. csg. 6,587-97 ft.; made sqze. job; drld. out; perf. csg. 6,510-20 ft.; made sqze. job; perf. csg. 6,550-57 ft.; tstg.
Humble O. & R. Co. No. 18 Community, sec. 30-10s-2e. R.U.
Kiva Oil Co. No. 1 Duplessis, sec. 69-10s-2w. S.D. 2,523 ft.

Dog Lake—Terrebonne Parish

Texas Co. No. 21 State, sec. 5-22s-16e. T.D. 7,174 ft.; P.B. 5,490 ft.; sdtrkd.; T.D. 6,882 ft.; 10¾-in. csg. parted; fsg.

Four Isle—Terrebonne Parish

Texas Co. No. 19 State-Lake, sec. 17-23s-18e. Drlg. sh. 6,144 ft.

Fausse Point—Iberia Parish

Texas Co. No. 4 State, sec. 35-11s-8e, 18⅝-in. csg. 90 ft.; top sd. 7,912 ft.; top salt 6,595 ft.; T.D. 9,246 ft.; 7⅝-in. csg. 9,236 ft.; T.D. 9,435 ft.; run 5½-in. csg.

Garden Island—Plaquemines Parish

Texas Co. No. 27 State, sec. 38-23s-33e. T.D. 5,108 ft.; 7-in. csg. 5,105 ft.; perf. csg. 4,850-4,900 ft.; I.P. 1,330 B.P.D.; ⅝-in. ck.

Hackberry—Cameron Parish

W. T. Burton No. 1 F. Lacy, sec. 22-12s-10w. Drlg. 70 ft.
W. T. Burton No. 3 Lewis, sec. 22-12s-10w. R.U.
John Merrick No. 1 R. Vincent, sec. 28-12s-10w. Drlg. sh. 3,354 ft.
Stanolind O. & G. Co. No. 8 Carter & Sweeney, sec. 22-12s-10w. R.U.
Stanolind O. & G. Co. No. 10 Carter & Sweeney, sec. 22-12s-10w. R.U.; (cor.).
Stanolind O. & G. Co. No. 55 State-Kelso Bayou, sec. 16-12s-10w. T.D. 3,152 ft.; I.P. 370 B.P.D.; ¼-in. ck.
Superior Oil Co. No. 1 Benson-Vincent, sec. 30-12s-10w. T.D. 6,913 ft.; P.B. 6,248 ft.; tstg.
Sutton Oil Co. No. 6 Duhon, sec. 22-12s-10w. T.D. 3,261 ft.; 7-in. csg. 3,245 ft.
Texas Co. No. 24-B State, sec. 12s-9w. T.D. 8,052 ft.; blew out; stk. D.S.; fsg.
Union Sulphur Co. No. 1 Doiron, sec. 37-12s-10w. 7-in. csg. 4,876 ft.; T.D. 5,940 ft.; S.T.; T.D. 5,023 ft.; P.B. 5,000 ft.; drlg. L. in sdtrkd. hole 5,246 ft.

Horseshoe Bayou—St. Mary Parish

Texas Co. No. 1 St. Mary Parish Ld. Co., sec. 37-17s-9e. 13⅜-in. csg. 1,837 ft.; cg. sh.&L. 10,752 ft.; cd. sd.; oil odor 10,655-95 ft.; T.D. 11,067 ft.; 7⅝-in. csg. 11,062 ft.; drld. out to 10,912 ft.; perf. csg. 10,900-09 ft.; 10-min. D.S.T. recvd. 4 bbls. S.W. and 1 bbl. oil; sqzd. perf. set retainer at 8,074 ft.; perf. csg. 10,891-95 ft.; I.P. 350 B.P.D.; 10/64-in. ck.; T.P. 1,625 lbs.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1-A Roane Sugar Co., sec. 38-13s-9e. Drlg. sh. 9,078 ft.

Jennings—Acadia Parish

F. W. Bennett No. 2 Brethern, sec. 41-9s-2w. S.D. 6,140 ft.
H. Fotiades No. 2 Washington Opelousas, sec. 41-9s-2w. 16-in. csg. 106 ft.; T.D. 6,659 ft.; 7-in. csg. 6,659 ft.; well blew out; reworking.
Frio Oil Co. No. 1 Gulf fee, sec. 45-9s-2w. Drlg. sd. 1,550 ft.
Frio Oil Co. No. 1 Iowa-Jennings, sec. 45-9s-2w. Drlg. shells and L. 3,432 ft.
Gulf Ref. Co. No. 39 Arnaudit, sec. 47-9s-2w. T.D. 4,840 ft.; P.B. 2,585 ft.; T.D. 4,586 ft.; 9⅝-in. csg. 4,578 ft.; T.D. 7,112 ft.; 7-in. csg. 7,076 ft.; I.P. 450 B.P.D.; ⅞-in. ck.
L. & L. Oil Co. No. 1 Syndicate Clement, sec. 46-9s-2w. 6⅝-in. csg. 1,590 ft.; T. D. 2,124 ft.; P.B. 1,852 ft.; I.P. 100 B. P.D., 70% S.W.
Lodak Oil Co. No. 5 J. Clement, sec. 46-9s-2w. Drk.
T. G. Markley No. 1 Gulf Ld., sec. 45-9s-2w. Drlg. sd.&sh. 5,170 ft.
W. S. Noble et al No. 1 Ed Prather, sec. 45-9s-2w. R.U.
Pet. Heat & Power Co. No. 1 Iowa-Jennings, sec. 45-9s-2w. T.D. 3,770 ft.; fsg.
Pet. Heat & Power Co. No. 1 Smith, sec. 45-9s-2w. Drlg. gbo. 805 ft.
Stanolind O. & G. Co. No. 19 Houssiere-Latrelle, sec. 47-9s-2w. T.D. 6,448 ft.; P.B. 6,135 ft. to strtn. hole; T.D. 6,979 ft.; P.B. 6,700 ft.; P.B. and sdtrkg. 7,509 ft.; T.D. 7,917 ft.; 7-in. csg. 7,917 ft.; drlg. out cmt.
Superior Oil Co. No. 3 Jules Clement, sec. 46-9s-2w. Drlg. sh.&L. 3,508 ft.
Superior Oil Co. No. 9 Leckelt, sec. 42-9s-2w. T.D. 7,281 ft.; sdtrkd.; T.D. 7,404 ft.; 7-in. csg. 7,350 ft.; I.P. 591 B.P.D.; 15/64-in. ck.
Superior Oil Co. No. 10 Leckelt, sec. 43-9s-2w. T.D. 4,528 ft.; fsg.
Superior Oil Co. No. 12 Leckelt, sec. 42-9s-2w. T.D. 6,695 ft.; 7-in. csg. 6,890 ft. I.P. 620 B.P.D.; 15/64-in. ck.
Superior Oil Co. No. 13 Leckelt, sec. 42-9s-2w. R.U.
Superior Oil Co. No. 14 Leckelt, sec. 42-9s-2w. Drlg. sh.&sd. 5,054 ft.
Victor Weisse No. 1 Clement, sec. 46-9s-2w. T.D. 3,247 ft.; 6⅝-in. csg. 3,032 ft. blew out; R.U. christmastree to test.

Lafitte—Jefferson Parish

Carter-Perrin & Brian No. 1 Lucien, Adams, sec. 9-17s-24e. Loc.
Texas Co. No. 10 Lafitte, sec. 17-17s-24e. Drlg. sdy. sh. 9,979 ft.
Texas Co. No. 1-B Madison, sec. 19-17s-24e. Drlg. sh.&L. 9,032 ft.
Texas Co. No. 3 Marrero Ld. Co., sec. 29-17s-24e. R.U.
Texas Co. No. 9 Rigolet-Cooperation Fur Co., sec. 29-17s-24e. Cd. oil sd. 10,106-11 ft.; T.D. 10,214 ft.; D.S. stk at 8,034 ft.; shot at 7,099 ft.; fsg.

Lake Barre—Terrebonne Parish

Texas Co. No. 16 State, sec. 32-21s-19e. Drlg. sd. 1,490 ft.
Texas Co. No. 42 State-Lake, sec. 40-21s-19e. Drlg. sd. 6,473 ft.

Lake Long—Lafourche Parish

Fohs Oil Co. No. 4 State, sec. 64-17s-19e. 10¾-in. csg. 2,707 ft.; T.D. 10,239 ft.; 7-in. csg. 10,239 ft.

Leesville—Lafourche Parish

Texas Co. No. 68 L.L.&E., sec. 27-21s-22e. T.D. 6,011 ft.

Lirette—Terrebonne Parish

Humble O. & R. Co. No. 1 Wurzlow, sec. 32-19s-19e. Top sd. S.G. 8,423 ft.; T.D. 8,566 ft.; rmg.
Union Prod. Co. No. 1 Fundenburk, Unit 1, sec. 50-19s-19e. Drlg. sh. 9,558 ft.

Lockport—Calcasieu Parish

Continental Oil Co. No. 1 J. H. Moss, sec. 8-10s-9w. 10¾-in. csg. 986 ft.

New Iberia—Iberia Parish

Wm. Helis No. 10 Bernard, sec. 54-12s-7e. Drlg. 150 ft.
Wm. Helis No. 5 Bolivar, sec. 56-12s-7e. T.D. 4,337 ft.; salt; P.B. and sdtrkd.; T.D. 3,594 ft.; 7-in. csg. 3,100 ft.; made sqz. job 3,070-60 ft.; P.B.; drlg. out 3,129 ft.
Wm. Helis No. 5 Schwing, sec. 56-12s-7e. Drlg. sdy. sh. 4,547 ft.
Texas Co. No. 4 Bryant, sec. 25-12s-7e. Drlg. sd. 4,816 ft.
Texas Co. No. 2 Burke, sec. 56-12s-7e. Drlg. sd. 1,318 ft.
Texas Co. No. 7 Duke, sec. 26-12s-7e. R.U.
Texas Co. No. 11-B Hanzen, sec. 54-12s-7e. T.D. 5,862 ft.; abd.

North Crowley—Acadia Parish

Humble O. & R. Co. No. 1 R. C. Davis, sec. 45-8s-1e. R.U.
Humble O. & R. Co. No. 2 Habetz, sec. 45-8s-1e. Drlg. sd. 7,104 ft.
Humble O. & R. Co. No. 1 Smith, sec. 44-8s-1e. 7-in. csg. 8,287 ft.; T.D. 8,855 ft.; abd.
Humble O. & R. Co. No. 1 Traham, sec. 3-9s-1e. 7-in. csg. 9,771 ft.; drlg. sh. 10,632 ft.

Port Barre—St. Landry Parish

Emerson Oil Co. No. 5 Sibille Oil Co., sec. 20-6s-5e. Drlg. sh. 3,410 ft.
Gulf Ref. Co. No. 5 State, sec. 17-19s-17e. Loc.
Gulf Ref. Co. No. 6 State, sec. 17-19s-17e. Driving piling.
T. C. Markley No. 1 Lahaye, sec. 4-6s-5e. R.U.
Texas Co. No. 22 Botney Bay Lbr. Co., sec. 4-6s-5e. T.D. 3,569 ft.; P.B. 3,434 ft.; set csg. 3,434 ft.; perf. csg. 3,370-3,400 ft.; R.U. to pmp.

Quarantine Bay—Plaquemines Parish

Gulf Ref. Co. No. 4 State, sec. 17-19s-17e. T.D. 5,700 ft.; 9⅝-in. csg. 5,560 ft. drlg. sd.&sh. 8,963 ft.

Raceland—Lafourche Parish

Amerada Pet. Corp. No. 1 Godchaux Sugars, Inc., sec. 34-15s-19e. 18⅝-in. csg. 262 ft.; drlg. sh. 2,680 ft.
Amerada Pet. Corp. No. 2 South Coast Corp., sec. 35-15s-19e. 11¾-in. csg. 2,666 ft.; T.D. 6,370 ft.; fsg.

Sorrento—Ascension Parish

Pan American Prod. Co. No. 10 United Ld. Co., sec. 15-10s-4e. Drlg. 356 ft.
Sorrento Oil Co. No. 2 White, sec. 22-10s-4e. Drk.

South Roanoke—Jeff Davis Parish

Continental Oil Co. No. 1 Joe Sturdivant, sec. 36-10s-4w. Drlg. 1,520 ft.

South Elton—Jeff Davis Parish

Stanolind O. & G. Co.-Amerada Pet. Corp No. 3-B Calcasieu Natl. Bank, sec. 27-7s-3w. T.D. 9,154 ft.; conditioning hole 9⅝-in. csg. 8,647 ft.; T.D. 13,210 ft.; D.S. stk.; P.B.; 7-in. csg. 9,230 ft.; P.B. 9,188 ft.; perf. csg. 9,140-55 ft.;

no showing; P.B. 8,998 ft.; perf. csg. 8,990-98 ft.; flwg. 300 bbls. S.W.; ¼-in. ck.; W.P. 625 lbs.; trace of sd. and dist.

Starks—Calcasieu Parish.

Lutcher-Moore Co. No. 5 fee, sec. 19-9s-12w. Drlg. gbo. 780 ft.

Sulphur—Calcasieu Parish

Union Sulphur Co. No. 860 fee, 1,250 ft. W and 216 ft. N of C sec. 29-9s-10w. Cg. sh. 5,141 ft.

Union Sulphur Co. No. 861 fee, sec. 29-9s-10w. Cg. sd. 3,512 ft.

Timbalier Bay—Lafourche Parish

Gulf Oil Corp. No. 4 State, sec. 36-23-21e. T.D. 1,373 ft.; twisted off drill collar; sdtrkd. jnk.; T.D. 2,007 ft.; drlg. sdy. sh. 4,975 ft.

Valentine—Lafourche Parish

Wm. Helis No. 1 Valentine-Sugars, Inc sec. 2-17s-20e. T.D. 7,134 ft.; P.B. and sdtrkd.; T.D. 7,068 ft.; P.B. 3,500 ft.; sdtrkd.; T.D. 7,057 ft.; abd.

Pan American Prod. Co. No. 2-B Community, sec. 58-17s-20e. T.D. 1,759 ft.; fsg.

Pan American Prod. Co. No. 1 Ducos-Ariabat, sec. 10-17s-20e. T.D. 7,882 ft.; P.B. 3,625 ft.; cd. oil sd. 3,830-50 ft.; T.D. 3,855 ft.; I.P. 219 B.P.D.; 12/64-in. ck.

Pan American Prod. Co. No. 17 Harang, sec. 9-17s-20e. Drlg. sd.&sh. 5,000 ft.

Venice—Plaquemines Parish

Tide Water Oil Co. No. 5 Manhattan Fruit Co., sec. 26-26s-30e. Top oil sd. 7,250 ft.; T.D. 7,300 ft.; P.B. 4,800 ft.; sdtrkd. at 4,813 ft.; cd. oil sd. 7,101-68 ft.; T.D. 7,290 ft.; 7-in. csg. 7,191 ft. perf. csg. 5,960-64 ft.; 10-min. D.S.T.; tstd. 120 ft. drlg. mud with oil odor; perf. csg. 5,964-68 ft.; recvd. 14 stnds. of oil, 3 stnds. of drlg. mud and sd.; making sqze. job; P.B. 3,650 ft.; side-tracked at 3,629 ft.; drlg. sd.&sh. 5,043 ft.

Tide Water Oil Co. No. 7 Manhattan Ld. & Fruit Co., sec. 26-21s-30e. 10¾-in. csg. 2,462 ft.; drlg. sdy. sh. 6,284 ft.

Vinton—Calcasieu Parish

M. McLean No. 17 Gray, sec. 35-10s-12w. R.U.; abd. loc.

J. V. Reddick No. 2 Vincent, sec. 34-10s-12w. T.D. 2,275 ft.; 7-in. csg. 2,275 ft.; perf. csg. 2,236-75 ft.; R.U. to pmp.; I.P. 40 B.P.D.; pmpg.; 6% S.W.

Villa Platte—Evangeline Parish

Amerada Pet. Corp. No. 1 A. Fournier, sec. 44-3s-2e. Drlg. sdy. sh. 2,772 ft.

Continental Oil Co. No. 1 Hattie Haas, sec. 44-3s-2e. Drlg. sh. 7,387 ft.

Continental Oil Co. No. 1 Martha Haas, sec. 44-3s-2e. Drlg. sh. 8,615 ft.

Continental Oil Co. No. 1 Ludeau, sec. 45-3s-2e. Drlg. sh. 4,840 ft.

Continental Oil Co. No. 1 Opelousas, St. Landry Securities Co., sec. 44-3s-2e. Top Sparta 8,640 ft.; T.D. 9,110 ft.; 6⅝-in. csg. on bttm.; I.P. 394 bbls. 16 hrs.; 5/32-in. ck.

Continental Oil Co. No. 1 T. E. Vidrine, sec. 47-3s-2e. Drlg. sh. 9,822 ft.

Welsh—Jeff Davis Parish

A. V. Peters No. 3 fee, sec. 22-9s-5w. Loc.

Stanolind O. & G. Co. No. 2 Conover, sec. 20-9s-5w. Drlg.sh.&L. 6,391 ft.

Woodlawn—Jeff Davis Parish

Union Sulphur Co. No. 3 Calcasieu Natl. Bnk., sec. 1-9s-6w. Drlg. sh. 3,824 ft.

S. LOUISIANA WILDCATS

Acadia Parish

H. E. Dalton No. 1 Setting, sec. 17-7s-1w T.D. 5,106 ft.; P.B. to approx. 500 ft. T.D. 3,925 ft.; D.S. stuck.

Humble O. & R. Co. No. 1 Finch, sec 22-10s-1e. 9⅝-in. csg. 7,474 ft.; T.D. 10,222 ft.; P.B. 7,318 ft.; perf. csg. 7,-308-15 ft.; flwd. 21 B.P.H. first day and started making 75% S.W.; sqzd. off perf.; prep. to reperf.

Avoyelles Parish

G. C. Koch et al No. 1 Kelone, sec. 21 2n-3e. 10¾-in. csg. 987 ft.; S.D. 6,021 ft.

Beauregard Parish

Republic Prod. Co. No. 1 Lutcher-Moore Lbr. Co., sec. 10-13w-6s. 10¾-in. csg 1,015 ft.; T.D. est. 8,290 ft.; perf. csg.; flwd. gas and dist.; S.I.

Calcasieu Parish

Sun Oil Co. No. 1 Lutcher-Moore Lbr. Co., sec. 1-8s-13w. Cg. sh. 7,925 ft.

Wheeler Oil Corp. No. 2 Sch. Ld., sec. 1-9s-7w. 15½-in. csg. 46 ft.; S.D. 641 ft

Cameron Parish

Humble O. & R. Co. No. 1 K. B. Hanzen, 466 ft. S and E, NW cor. SW¼ sec. 9-12s-6w. Drk.

Humble O. & R. Co. No. 1-B Miami Corp., sec. 7-14s-6w. 13⅜-in. csg. 2,150 ft.; T.D. 9,270 ft.; P.B. 8,850 ft.; drld. by fish; drlg. sd. 9,722 ft.

Superior Oil Co. No. 1 Sells, sec. 5-15s-8w. T.D. 6,350 ft.; 10¾-in. csg. 6,350 ft.; drlg. sh.&L. 6,978 ft.

Iberia Parish

Texas Co. No. 1 Bayless-Jones, sec. 58-12s-5e. Drlg. blk. L. 8,220 ft.

Texas Co. No. 2-B Vermilion Bay, sec. 20-16s-5e. T.D. 9,101 ft.; P.B. and sdtrkd at 5,788 ft.; T.D. 7,020 ft.; P.B. 6,385 ft.; to sdtrk.; T.D. 7,623 ft.; P.B. 7,-176 ft.; to sdtrk.; T.D. 7,348 ft.; 9⅝-in. csg. 7,263 ft.; drlg. S.W. sd. 8,-985 ft.

Jefferson Parish

Julius Szodomka No. 1 Carroll, sec. 12 12s-11e. Drlg. sdy. sh. 3,708 ft.

Lafourche Parish

Sun Oil Co. No. 1 Dilbert Stark, Brown Cypress Co., sec. 70-15s-15e. Drk.

Orleans Parish

W. T. Burton No. 1 State-Lake Pontchartrain, Twp. 10s-13e. Loc.

Pointe Coupe Parish

Batchelor Oil Co. No. 1 Hackney, sec. 28-3s-8e. 20-in. csg. 117 ft.; 13⅜-in. csg. 2,170 ft.; drlg. sh. 9,657 ft.

Rapides Parish

J. J. Farrell No. 1 W. P. Aertker, sec. 16-4n-1e. Drk.

St. Bernard Parish

Gulf Ref. Co. No. 3 State Lake, Twp. 12s-15e. 13⅜-in. csg. 1,558 ft.; 9⅝-in. csg. 6,486 ft.; drlg. sd.&grvl. 6,737 ft.

St. James Parish

Continental Oil Co. No. 1 Realty Operators, sec. 17-12s-17e. 18⅝-in. csg. 302 ft.; 13⅜-in. csg. 2,473 ft.; cg. sh. 5,-959 ft.

St. Landry Parish

Western Gulf Pet. Co. No. 1 St. Mary Ld. Co., sec. 7-8s-9e. Drlg. sd.&sh. 8,-190 ft.

St. Martin Parish

Texas Co. No. 11 St. Martin Ld. Co., sec. 21-8s-7e. R.U.

St. Tammany Parish

Ozro B. Phillips No. 1 A. J. Planche, sec. 28-6s-10e. R.U.

Ozro B. Phillips No. 2 W. L. Stevenson, sec. 33-6s-10e. T.D. 2,326 ft.; P.B. 1,-509 ft.; made D.S.T. 1,486-1,509 ft.; showed fresh wtr.; abd.

Terrebonne Parish

Barnsdall Oil Co. No. 1 R. R. Barrow, Inc., sec. 41-17s-18e. Bldg. drk.

Fohs Oil Co. No. 1 Buckley & Bourg, sec. 77-19s-17e. Drlg. sh. 12,555 ft.

Fohs Oil Co. No. 1 State, sec. 41-19s-19e. 18⅝-in. csg. 246 ft.; cd. sd. S.G. 6,894-6,915 ft.; T.D. 9,232 ft.; 9⅝-in. csg. 9,226 ft.; cg. sh. 11,020 ft.

Vermilion Parish

Magnolia Pet. Co. No. 1 J. B. Ferguson, sec. 5-12s-2w. 13⅜-in. csg. 3,084 ft.; cg. sh. 7,255 ft.

Vernon Parish

W. T. Burton No. 1 Gulf Lbr. Co., sec. 32-1n-6w. Loc.

TEXAS

Week Ending May 14

GULF COAST FIELDS

Lockridge—Brazoria County

Gulf Oil Corp. No. 5 Carrie Baker, J. W. Hall Sur. No. 11. Drlg. sh. 1,810 ft.

Hastings Field—Brazoria County

E. M. Hailey No. 2 Blumer, H.T.&B. Sur No. 28. T.D. 6,111 ft.; S.D.; failed to flow.

Humble O. & R. Co. No. 10 South Tex. Grain Co., Perry & Austin Sur. Loc.

Jay Simmons No. 6 C. H. Alexander, H. T.&B. Sur. No. 27. Drlg. sh. 5,879 ft.

Stanolind O. & G. Co. No. 8-B Brown, H.T.&B. Sur. No. 29. Drk.

Stanolind O. & G. Co. No. 8-B C. D. Brown, H.T.&B. Sur. No. 29. Drlg. sh. &L. 3,310 ft.

Stanolind O. & G. Co. No. 1 Carrie B. Roberts, R. A. Magee Sur. R.U.

Stanolind O. & G. Co. No. 19 Drake, H. T.&B. Sur. No. 36. R.U.

Stanolind O. & G. Co. No. 14 G. S. Sneed, A.C.H.&B. Sur. No. 2. T.D. 6,080 ft.; W.O.C.

Old Ocean—Brazoria County

Harrison-Abercrombie No. 1 L. Augusburger, C. Breen Sur. 9⅝-in. csg. 7,-011 ft.; drlg. sh. 9,831 ft.

Harrison-Abercrombie No. 1 David Kaufman, C. Breen Sur. Drlg. sh. 9,139 ft.

Harrison & Abercrombie Oil Co. No. 1 Troyer and West Texas Abst. Co., C. Breen Sur. T.D. 10,314 ft.; tstg.

Harrison & Abercrombie No. 1 I. N. Troyer, Chas. Breen Sur. Drlg. sh. 3,-910 ft.

Pledger—Brazoria County

Danciger O. & R. Co. No. 1 Leona H. Carter, Grey & Moore Sur. Spd.

West Columbia—Brazoria County

Adrian Moore No. 1 Gulf fee, Geo. Tennille Sur. Drlg. sh. 5,412 ft.

Frost and Dunnan No. 1 E. S. Parker, Geo. Tennille Sur. Drlg. L. 3,678 ft.

Mike Hogg No. 2 Varner, W. Varner Lge. Drlg. sh. 5,339 ft.

Texas Co. No. 20-A Abrams, George Tennille Sur. T.D. 5,931 ft.; P.B. 5,928 ft.; tstg.; I.P. 529 B.P.D.; ¼-in. ck.

Texas Co. No. 21 Abrams, Geo. Tennille Sur. T.D. 5,433 ft.; P.B. to sdtrk.; drlg. sh. 4,830 ft.

Texas Co. No. 23 Abrams, G. Tennille Sur. R.U.

Texas Co. No. 5 Smith, G. Tennille Sur. R.U.

Calhoun-Heyser—Victoria County

Blanco-Buchanan No. 10 Dunwoody, A. Sisneros Sur. Recvd. oil and S.W. on D.S.T. 5,592-99 ft.; run csg.

Geo. Echols No. 12 W. H. Bennett, J. Galban Sur. T.D. 6,037 ft.; perf. csg. 6,031-33 ft.

Cedar Point Field—Chambers County

Humble O. & R. Co. No. 2 State, Tr. 95. Drlg. sd. 4,007 ft.

Standard Oil Co. of Texas and Salt Dome Oil Co. No. 2 State, sec. 119, 16-in. csg. 286 ft.; 10¾-in. csg. 1,650 ft.; cg. csg. 286 ft.; 10¾-in. csg. 1,650 ft.; T. D. 6,120 ft.; perf. csg. 6,040-98 ft.; tstg.

Seabreeze—Chambers County

Sun Oil Co. No. 1 R. J. Barrow, A. Yarbo Sur. T.D. 8,502 ft.; 7-in. csg. on bttm.; perf. csg. 8,485-90 ft.; perf. csg. 8,472-77½ ft.; flwg. oil and wash wtr.

Sun Oil Co. No. 2 Sea Breeze Land Co., sec. 102, H.T.&B. Sur. T.D. 8,854 ft.; 7-in. csg. 8,837 ft.

Hitchcock—Galveston County

N. W. Hunter No. 3 M. Stewart, J. Spillman Sur. Drlg. sh. 3,069 ft.

Clinton—Harris County

Stanolind O. & G. Co. No. 1 Velma Johnson, Unit No. 1, Reels and Trobough Sur. T.D. 3,833 ft.; 5¾-in. csg. 3,825 ft.; I.P. 462 B.P.D.; ¼-in. ck.

Eureka—Harris County

Allamo Drlg. Co. et al No. 3 Laura Lackner, H. Reinerman Sur. 9⅝-in. csg. 2,-508 ft.

J. Frazier, No. 2 Vollmer & Neiman, J. Reinerman Sur. Drlg. sh. 7,559 ft.

Houston Oil Co. No. 2 Helberg-Lackner, J. Reinerman Sur. Drlg. sh. 5,710 ft.

Fairbanks—Harris County

H. A. Adams No. 3, J. P. Dawson Sur. Drlg. sh.&L. 1,950 ft.

Amerada-Stanolind O. & G. Co. No. 1 Bellmare, G. Ayers Sur. T.D. 6,844 ft.; 5½-in. csg. 6,843 ft.

Amerada-Stanolind O. & G. Co. No. 2 E. W. Mills, A. Lawson Sur. Drk.

Amerada Pet. Corp.-Stanolind O. & G. Co. No. 1 C. W. Hahl, W. K. Hamblin Sur. Drk.

Amerada-Stanolind O. & G. Co. No. 1 Post, G. Ayers Sur. T.D. 6,854 ft.; perf. csg. 6,838-51 ft.

Amerada Pet. Corp. No. 1 R. Smith, J. Waugh Sur. T.D. 6,850 ft.; tstg.

Amerada Pet. Corp.-Stanolind O. & G. Co. No. 1 J. P. Dawson, W. K. Hamblin Sur. T.D. 6,844 ft.; 5½-in. csg. 6,843 ft.

Amerada Pet. Corp.-Stanolind O. & G. Co. No. 1 Foley, J. Clarkson Sur. T.D. 6,853 ft.; perf. csg. 6,836-54 ft.; flwd. P.L.O.; started to make S.W.; reperf. csg.; flwd. oil and S.W.; killed.

Carroll Oil Co. No. 1 Ralph Johnston, J. N. Dement Sur. T.D. 6,864 ft.; run csg.

Housch-Thompson & Schofield No. 1 Windorf, G. Williams Sur. Drk.

Mortex Oil Co. No. 1 H. E. Ley, J. Waugh Sur. 16-in. csg. 80 ft.; T.D. 6,-839 ft.; recompleting; high gas-oil ratio.

Showers and Moncrief No. 1 G. W. Reid, J. Waugh Sur. Drlg. sh. 1,520 ft.

Smith and Ownby Drlg. Co. No. 1 E. M. White, J. Clarkson Sur. R.U.

Union Prod. Co. No. 1 Goodykoontz, W. S. Powell Sur. Drlg. sh. 3,339 ft.

Windsor Oil Co. No. 1 Ley, J. Waugh Sur. Loc.

Friendswood—Harris County

Humble O. & R. Co. No. 7 Beamer, T. Choate Sur. Drlg. sh. 5,632 ft.

Humble O. & R. Co. No. 8 Beamer, T. Choate Sur. Drk.

Humble O. & R. Co. No. 2 B. H. Goodwin, W. K. Smith Sur. T.D. 6,044 ft.; W.O.C.

Humble O. & R. Co. No. 8 E. A. Grey, Perry & Austin Sur. Drlg. sh. 5,056 ft.

Humble O. & R. Co. No. 1 Herman Hospital, T. Choate Sur. T.D. 5,790 ft.; flwd. wash wtr.; set retainer; I.P. 27 B.P.H.

Humble O. & R. Co. No. 2 Herman Hospital, T. Choate Sur. Drlg. sh. 1,510 ft.

Humble O. & R. Co. No. 1 J. L. Jones, Perry & Austin Sur. Drk.

Humble O. & R. Co. No. 1 Port City, T. Choate Sur. Drlg. sd. 6,014 ft.

Humble O. & R. Co. No. 1 E. E. Watson. Drk.

Cordele—Jackson County

Crown Central Oil Co. and H. J. Porter No. 2 Foust, Peter White Sur. T.D. 2,802 ft.; tstd. S.W.; P.B. 2,689 ft.; tstg.

H. J. Porter No. 1 Kern-Ackley, A. Baker Sur. Loc.

H. J. Porter No. 1 Ed Monia Pressley, Peter White Sur. Drk.

H. J. Porter No. 1 Woussi, Peter White Sur. Loc.

Clam Lake—Jefferson County

Shell Pet. Corp. No. 2 McFaddin, S. A. Pace Sur. Cd. oil sd. 5,553 ft.; drlg. sh. 6,165 ft.

North Cheek—Jefferson County

Magnolia Pet. Co. No. 4 J. H. Phelan, A. Stivers Sur. 18⅝-in. csg. 135 ft.; drlg. sh. 8,086 ft.

Hardin—Liberty County

Atlantic Ref. Co. No. 1-B McMurtry, A. B. Hardin Sur. Drlg. sh.&L. 6,363 ft.

Atlantic Ref. Co. No. 2 W. McMurtry, H. B. Johnson Sur. T.D. 7,871 ft.; 7-in. csg. on bttm.; perf. csg. 7,828-31½ ft.; jetting with gas.

Fohs Oil Co. No. 2 Johnson-Finley, H. B. Johnston Sur. 9⅝-in. csg. 178 ft.; drlg. sh. 5,615 ft.

Gulf Oil Corp. No. 3-A J. C. Barfield, H. B. Johnston Sur. Drlg. sh. 1,510 ft.

Humble O. & R. Co. No. 3 Chambers, A. B. Hardin Sur. T.D. 7,580 ft.; comp.; no ga.

Sun Oil Co. No. 2 Hisey, H. B. Johnston Sur. T.D. 7,708 ft.; 5¾-in. csg. 7,-660 ft.; swbd. S.W.; pulling screen and lnr.

Woodley Pet. Co. No. 1 W. S. Partlow, H. B. Johnston Sur. Spd.

Woodley Pet. Co. No. 1 West et al, H. B. Johnston Sur. Drlg. sh. 2,013 ft.

Bay City—Matagorda County

Hamman Expln. Co. No. 2 Crooke, E. Hall Sur. Top sd. 9,660 ft.; tstg.; no report.

Hamman Expln. Co. No. 2 G. M. Sloan, J. T. Belknap Sur. Drk.

Palacios—Matagorda County

Bennett Prod. Co. No. 1 Foley Ld. Co., L. Goodwin Sur. Cg. sh. 7,556 ft.

Sun Oil Co. No. 1 F. K. Robeson, L. Goodwin Sur. Drk.

Orange—Orange County

W. V. Bowles No. 1 J. H. Scales, Wm. Dyson Sur. Cg. 5,915 ft.

Gulf Oil Corp. No. 1 O. Duhon, Wm. Dyson Sur. T.D. 7,604 ft.; abd.

Ryan & Thompson No. 1 Walter-McGill, Wm. Dyson Sur. T.D. 6,123 ft.; rng. csg.; top oil sd. 6,112 ft.; 7-in. csg. 6,-111 ft.; flwd. P.L.O. for 6 hrs.; went dead; swbd. S.W.; made sqze. job; drld. out 6,114 ft.; flwg. 26 B.F.P.H.; 25 to 30% S.W.; recmtd.; swbg.

Segno—Polk County

Gulf Oil Corp. No. 2 Ragan, I.&G.N. Sur. 15. 9⅝-in. csg. 5,587 ft.; 20-min. D.S. T. 8,146-61 ft.; tstd. 2,400 ft. P.L.O.; 140 lbs. pres.; drlg. sh. 9,162 ft.

Humble O. & R. Co. No. 8-B Kirby, M. Victor Sur. Drlg. sh. 7,387 ft.

Spurger—Tyler County

Republic Prod. Co.-Houston Oil Co. No. 9, Hurd, N. Hurd Sur. Drlg. sh.&L. 7,579 ft.

GULF COAST WILDCATS

Brazoria County

Pure Oil Co. No. 1 Clemons State Farm, S. F. Austin 7⅛ Lge. 7⅝-in. csg. 1,955 ft.; T.D. 6,788 ft.; abd.

Texas Co. No. 5 Freeport Sulphur Co., H. Burt Sur. Drk.

Brazos County

Pet. Heat & Power Co. No. 1 Minnie C. Dunn, J. M. Barrera Sur. S.D. 5,040 ft.

Burleson County

Red Bank Oil Co. No. 1 Coffield, E. Sante Sur. T.D. 6,171 ft.; flwg. 35-grav. oil and wash wtr.; tstg.

Calhoun County

Adams & Lyles et al No. 1 Forster, Lemuel Walker Sur. Spd.

Chambers County

Geo. Anderson No. 1 Julia Casey, W. D. Smith Sur. Loc.

Fort Bend County

Strake Pet. Corp. No. 1 G. L. Dew, D. Bright Sur. R.U.

Galveston County

Sun Oil Co. No. 1 Atkins, Burrell Franks Sur. Cg. sh. 5,250 ft.

Sun Oil Co. No. 1 Cade, A. Dickinson, 13⅜-in. csg. 2,218 ft.; drlg. sh. 6,880 ft.

Harris County

J. Frazier-C. B. Bunte et al No. 1 Houston Deep Water Ld. Co., Thos. Earle Sur. R.U.

J. Frazier No. 1 Robert Gillespie, S. Contreras Sur. T.D. 7,785 ft.; abd.

W. S. Howell No. 1 Root, A. McCormick Sur. S.D. 2,807 ft.

O. W. Killam No. 1 Mary Hambien, W. C. R.R. Sur. No. 11. T.D. 7,015 ft.; S.D.

Merit Oil Co. No. 1 Guy Smith, F. Rankin Sur. Drk.

West Prod. Co. No. 1A fee, Geo. B. McKinstry Sur. Drlg. sh. 5,738 ft.; no report.

Jasper County

John Mayo No. 1 Cartwright, Legrande Sur. Drk.

Jackson County

Humble O. & R. Co. No. 1 J. R. Davis, I.&G.N. Sur. No. 20, Blk. 150. Drk.

Magnolia Pet. Co. No. 1 West Ranch, Ramon Musquez Sur. Drlg. sh. 4,839 ft.

Jefferson County

I. E. Harwell No. 1 State, Gulf of Mexico, T.D. 5,840 ft.; D.S. stk.; pulled in two; S.D.; may abd.

Humble O. & R. Co. No. 1 State, Gulf of Mexico, sec. 8. Top salt 2,603 ft.; S.D.; salt 2,655 ft.; abd.

Liberty County

John Mayo-Chapman Minerals No. 1 J. Blanding, J. Eldridge Sur. Drlg. sh. 3,112 ft.

Matagorda County

J. K. Dorrance No. 1 M. Adamcik, I.&G. N. Sur. No. 1. T.D. 7,512 ft.; P.B. 3,500 ft.; sdtrkd.; drlg. sh. 6,150 ft.

Rutherford Drlg. Co. No. 1 J. A. Birkner-Williams, Low, Thayton and Barter Sur. Drlg. sdy. sh. 7,869 ft.

Sun Oil Co. No. 1 Fred Robbins, C. H. Vandeveer Sur. T.D. 10,160 ft.; well tried to blow out; 7-in. csg. 10,150 ft. perf. csg. 9,970-10,030 ft.; flwg. by hds.; went dead; S.D.

Texas Co. No. 1 C. T. Kountze, P. J. Poole Sur. T.D. 6,520 ft.; S.D.

Montgomery County

J. Smith et al No. 1 J. V. Scott, F. A. B. Wheeler Sur. R.U.

Orange County

Texas Co. No. 1 H. J. Lutcher-Stark, Stephen Jett Sur. Drlg. sh. 6,537 ft.

Polk County

C. E. Gates No. 2 I. O. Jackson, J. W. Abbey Sur. Drk.

San Jacinto County

J. W. Oliphant No. 1 Gibbs, Chas. Memin Sur. Drlg. sh. 4,126 ft.

Trinity County

Boone Bros.-Jordan Drlg. Co. No. 1 Crauch, Joel Clapp Sur. Spd.; no report.

Tyler County

Glenn H. McCarthy No. 1 J. A. McShane, B.B.B.&C. Sur. No. 13. Spd.

Waller County

David MacDaniel No. 1 H. C. Leverkuhn, Lacey Pearsall Sur. 10¾-in. csg. 832 ft. fsg.; T.D. 6,622 ft.; D.S. stk.; abd.

Stanolind O. & G. Co. No. 1 Freeman, H.&T.C. Sur. No. 99. T.D. 7,525 ft.; run 9⅝-in. csg.

Wharton County

T. A. Carlton No. 1 Lewis, S. Castleman Sur. Cg. sh. 4,760 ft.

S. W. TEXAS WILDCATS

Atascosa County

W. M. Allison No. 1 Nieschwietz, J. De La Garza Sur. 216. Abd. at 575 ft.

G. D. Curly and R. E. Phalon No. 1 Henritta Kresch, J. C. Dierks Sur. S.D. 20 ft.

G. C. Richardson No. 1 Fisher, Beaty & Moulton Sur. 1013. S.D. 500 ft.

S.W.R. Corp. No. 1 Miller, J. Neill Sur. S.D. 702 ft.

Bastrop County

R. C. Franklin No. 2 Yarrington, Jose Manuel Bangs Sur. Drlg. 126 ft.

Humble O. & R. Co. No. 1 Hellsman, J. Cunningham Sur. T.A.C. 5,631 ft.; drlg. 6,239 ft.

Ralph Ogden No. 1 Storey, Henry Warnell Sur. Drk.

Western Gulf Pet. Corp. No. 1 T. M. Moon, Jacob L. Standifer Sur. No. 15. R.U.

Bexar County

Eckert & Son. No. 1 Nutzel, N1 Motoya Sur. No. 21. T.D. 1,054 ft.; abd.

Nami Herman No. 1 W. F. Fields, A. Bustillos Sur. T.D. 514 ft.

Luling O. & G. Co. No. 1 Russell, Fernando Rodriquez Sur. T.D. 1,480 ft.; Edw. L.; P.B. 1,180 ft.; acdzd.; pmpd. 38 bbls. fluid, 8 hrs., 60% sulfur wtr.

Caldwell County

Banke Miller Oil Co. No. 1 Martindale, Hector McNeil Sur. Cg. 2,629 ft.

Jan Oil Co. No. 1 Chew, J. McCoy Sur. T.D. 2,022 ft.; 5½-in. csg. 1,930 ft.

Mencill Pet. Co. No. 1 J. Wallinger, Gedeon Pace Sur. S.D. 536 ft.

C. R. Richardson No. 1 Schowe, T. Maxwell Sur., Abst. 188. S.D. 850 ft.

Cameron County

Saxet Prod. Co. No. 1 Port Isabel Irrig. Co. Sur. 30. Drk.

E. B. Whittington No. 1 Gilmer, H. C. Williams Sur. No. 62. R.U.

De Witt County

Howeth et al No. 1 Tipton, Sidney Sherman Sur. T.D. 4,505 ft.; abd.

Mayo Oil Co. No. 1 W. D. McCurdy, John Hunt Sur. R.U.

Dimmitt County

Texas & Maryland Corp. No. 1 McKnight Blk. 13, sec. 23. Base of Austin Chalk 6,201 ft.; top Georgetown L. 6,120 ft. 5½-in. csg. 7,094 ft.; T.D. 7,141 ft.; P.B. 2,850 ft.; swbd. S.W.; shot with nitroglycerin 2,451-56 ft.; blew out; killed; found csg. parted 900 ft. from top; fsg.

Duval County

Henry Brown No. 1 Guy Est., M. E. Gussett Sur. S.D. 3,207 ft.

Verne Clopton No. 1 Denn, H. K. Allison Sur. R.U.

N. V. Duncan No. 1 Neeley, R. F. Neeley Sur. No. 284. Drk.

Frank Gravis No. 1 Megargal, J. Boyles Sur. 10-in. csg. 500 ft.; S.D.

H. & H. Drlg. Co. No. 1 Haglst, B.S.&F. Sur. No. 271. Drk.

Magnolia Pet. Co. No. 1 Weill Est., Sur. 496. T.D. 2,074 ft.; tstg.

H. J. Porter No. 1 Fitzsimmons, J. Poitevent Sur., sec. 291. Tstd. 450 ft. P.L. O.; 90 lbs. pres. on D.S.T. 4,265-4,305 ft.; rng. csg.

Rowan & Hope No. 1 Cuellar, B.B.B.& C. Sur., sec. 96. 10¾-in. csg. 198 ft.

Standard Oil Co. of Texas No. 1, Dolores Garcia Sur. Loc.

Edwards County

Evans & Love No. 1 Steve Brown, Blk. 6, G.W.T.&P. Sur. S.D. 6,261 ft.

Frio County

F. L. Thompson No. 1 Davis, G.B.&C.N. G. Sur. No. 1. Drlg. sdy. sh. 3,598 ft.

Gonzales County

Heard-Hall & Young No. 1 Clark, Robt. S. Armistead Sur. Drlg. 43 ft.

Guadalupe County

Benstrasser No. 1 Eickenroht, A. Marrs Esnaurrezar Sur. R.U.

Hidalgo County

Hidalgo Prod. Co. No. 1 Daskam Corp., Porc. 45, Blk. 34. Drlg. sh. 3,710 ft.

Jim Hogg County

Humble O. & R. Co. No. 1 Anna Kelsy Bass, San Rafel Gr. 10¾-in. csg. 1,207 ft.; drlg. sh. 3,855 ft.

Jim Wells County

E. Calloway et al No. 1 E. O. Cook, Lavaca Grant Sur. Cg. sd.&sh. 3,428 ft.

W. J. Coates No. 1 Lindsay & Reed, Lavaca Gr. Loc.

Conroe Drlg. Co. et al No. 1 Lindsay & Reed, Lavaca Gr. Cg. sh. 3,410 ft.

Cox & Hamon No. 1 W. R. Perkins, Lavaca Gr. Drlg. 3,980 ft.

Walter Goldston No. 1 Lindsay & Reed, LaVaca Gr. Drlg. sh. 3,486 ft.

H. H. Howell et al No. 2 Lindsey, Lavaca Gr. Drlg. 3,430 ft.

H. H. Howell No. 3 Lindsay et al, Lavaca Gr. Sur. Cg. 4,237 ft.

Humble O. & R. Co. No. 1 Tarrant, J. Poitevent Sur. Drlg. 1,500 ft.

Richardson Pet. Co. No. 2 Garcia, R. E. L. King Sur. Cg. 6,017 ft.

Southern Minerals Oil Corp. No. 1 J. R. Trussells, Lavaca Gr. 10¾-in. csg. 540 ft.; drlg. sh. 3,510 ft.

Kerr County

Edminston No. 1 Saul, Sur. 47. S.D. 55 ft.

Kleberg County

Pure Oil Co. et al No. 1 State Ld., Tr. 68, Laguna Madre Bay, Lse. No. 638 R.U.

La Salle County

Finley S. Ewing No. 1 Pugh, E. L. Garrett Sur. S.D. 780 ft.

Eugene Garner No. 1 Yeager, Lot 6, Wallace Subd. of Sur. No. 39. R.U.

Lee County

Eleoussa Oil Co. No. 1 Sanders, J. Vin Roeder Sur. T.D. 4,398 ft.; prep. to resume drlg.

Live Oak County

R. H. Feltner No. 1 Reed, I.&G.N. R.R. Sur. 15. R.U.

Gilcrease Oil Co. No. 1 Brannan, B.S.& F. Sur. Bldg. drk.

Hantho-Nelson No. 1 Geo. West, G. L. Haas Sur. Cg. 3,627 ft.

Holland Oil Co. No. 1 West Est., C. Q. Ragland Sur. 10¾-in. csg. 189 ft.

J. I. Newton No. 2 Geo. West, James Wright Sur. 10-in. csg. 189 ft.; cg. sh. 1,881 ft.

V. G. Schimmel et al No. 1 Geo. West, G. L. Haas Sur. T.D. 210 ft.

Transwestern Oil Co. No. 1 Stephens, C. F. Simmons Subd., sec. 74. S.D. 1,805 ft.

McMullen County

N. V. Duncan No. 1 Nueces Ld. & Livestock Co., B.S.&F. Sur. No. 119. Drk.

Hamill and Smith No. 1 Franklin, Live Oak Co. Sch. Ld. Sur. No. 3. T.D. 3,510 ft.; abd.

R. C. Lipscomb No. 1 Shiner, sec. 54, Shiner ranch. Cd. oil sd. 1,365-70 ft.; tstg. 1,752 ft.

S. M. Nesser No. 1 Franklin, J. Poitevent Sur. No. 33. Loc.

G. G. Newton No. 1 Bryne, Geo. Pettuck Sur. S.D. 670 ft.

Reynolds & Richardson No. 3 Shiner, Shumway Subd. of Shiner ranch. Loc.

V. G. Schimmel No. 1 Jefferson O. & G. Co., C. P. Wright Sur. No. 92. S.D. 2,615 ft.

Medina County

F. A. Brown No. 1 Senne, A.C.H.&B. Sur. 105. Logged 8 ft. of sat. oil sd. 802-11 ft.; (corrected); 7-in. csg. 802 ft.; tstg.

J. W. Cromwell No. 1 J. W. Tondre, I. J. Rogers Sur. T.D. 733 ft.; S.D.

D. K. J. Oil Co. No. 1 Burrell. T.D. 2,039 ft.; S.D. after swbg. dry.

S. F. Ewing No. 2 Riff, J. Haby Sur. No. 42. Drlg. 700 ft.

Gee Hayes et al No. 1 Conrad, J. Keppler Sur. S.D. 400 ft.

Owens and Dean No. 1 Ben Haby, Albert Kempf Sur. No. 37. T.D. 771 ft.; 7-in. csg. 637 ft.

Taylor & Pepper No. 1 Saathoff, Peter Eichorn Sur. Drlg. sh. 310 ft.

J. R. Trentman et al No. 1 Carle Merc. Co., V. A. Johnson Sur. T.D. 1,905 ft.; 7-in. csg. 1,835 ft.; csg. split; prep. to sqze. split with cmt.; S.D.

M. L. Walker No. 1 Zuberbulen, A. Bonamy Sur. Drlg. 60 ft.

Milam County

Clark & Morgan No. 1 Johnson, Juan Jose Acosta Sur. S.D. 575 ft.

Texedo Oil Co. No. 1 Graham, Charles Cornea Sur. Logged S.O. 1,135-36 ft.; S.D. 1,760 ft.

Texedo Oil Co. No. 1 Paul Garves, C. Robertson Sur. S.D. 1,170 ft.; C.O.; set 7-in. csg. 1,167 ft.

Nueces County

Coast Line Oil Co. No. 1 State (Redfish Bay), State Tr. No. 32. Drlg. sh. 7,212 ft.

J. W. Cosner No. 1 LaPrelle, Robert White Subd. of Hoffman Petronellia ranch. R.U.

Mills Bennett Prod. Co. No. 1 Fred Talley, sec. 10, Geo. Paul Subd. 10-in. csg. 759 ft.; drlg. sh. 6,110 ft.

Refugio County

I. J. Allen et al No. 1 Rooke, Jose Miquel Aldrite & Jose Maria Aldrite 4⅓ Lge. R.U.

San Patricio County

A. L. Bob No. 2 Green, T. T. Williamson Sur. S.D. 7,100 ft.

Conroe Drlg. Co. No. 1 Kune and Whittcliff, sec. 39, Coleman Fulton Pasture Lds. T.D. 7,014 ft.; abd.

J. K. Culton No. 1 White Point Dev. Co., J. H. Sequin Sur. No. 4. T.D. 4,966 ft.; 7-in. csg. on bttm.

Humble O. & R. Co. No. 1 T. J. Carmody, sec. 22, Third Addn. of Taft farm lands. Drk.

Humble O. & R. Co. No. 1 Smith and Talbert, Lot 2, sec. 37. T.D. 4,836 ft.; rng. 7-in. csg.; P.B. 4,825 ft.; perf. csg. 4,820-22 ft.; tstd. 3,300 ft. oil, 400 ft. perf. csg. 4,808-10 ft.; comp. for dry gas well.

Starr County

O. C. Borah No. 1 P. G. Garcia, Juan Salinas Sur. Drlg. sh. 512 ft.

O. C. Borah No. 2 Martinez, J. Salinas Sur. S.D. 370 ft.

O. C. Borah No. 7 Martinez, Joaquin Salinas Sur. S.D. 455 ft.

J. L. Collins No. 1 Francisco B. Guerra, Santa Cruz Gr. T.D. 6,609 ft.; well blew out; P.B. and sdtrkd.; drld. into old hole; S.D.

G. E. Dodd No. 1 Wardner, Porc. 84. T.D. 2,164 ft.; 4-in. csg. 2,146 ft.; swbd. dry; S.D.

G. E. Dodd No. 1-A Wood, V. Vela Sur. No. 84. Core sh. 1,500 ft.; no report.

Henshaw-Davis No. 1 Garcia, M. M. Garcia Sur. Cd. oil sd. 2,675-82 ft.; 30-min. D.S.T. 2,672-82 ft.; tstd. 90 ft. of oil; slight show of brksh. wtr.; tstg. through perf. 2,662-69 ft.; showing small amt. of oil.

Sioux Oil Co. No. 7 Ricaby, Porc. 83. Drlg. sh. 110 ft.

Sun Oil Co. No. 1 Young, J. Sisneros Sur. No. 79. Drlg. sh. 1,512 ft.

Travis County

R. F. C. Oil Co. No. 1 Jones, Reuben Hornsby Sur. No. 17. Drlg. 150 ft.

I. Ripp No. 1 Thaxton, Santiago De Valle Gr. S.D. 450 ft.

Texas Empire Trading Co. No. 1 E. F. Jourdan, Santigo Del Valle Gr. T.D. 709 ft.; 5½-in. csg. 611 ft.

Victoria County

W. V. Bowles No. 2 Robertson, T. C. Burnham Sur. Loc.

Webb County

C. C. Bonner No. 1 Lewis, W. P. Rutledge Sur. 460. Cg. sh. 2,034 ft.

Garrison & Paris No. 1 Benavides, Hale Subd. of M. Arispe Gr., C Blk. 107. Drk.

H. & H. Drlg. Co. No. 1 Laurel Bros., C.C.S.D.&R.G.N.G. Sur. No. 270. Drlg. S.W. sd. 1,958 ft.

Willacy County

Continental Oil Co. No. 2 Garcia Ld. Co., Blk. 118. Drlg. sh. 8,999 ft.

Magnolia Pet. Co. No. 1 Armendaiz, San Juan DeCarricitos Gr., Sh. 4. 8⅝-in. csg. 9,640 ft.; T.D. 9,960 ft.; set plug 9,593 ft.; drlg. sh. 10,197 ft.

Williamson County

Marion Aldridge No. 1 Kroschewsky. T.D. 1,033 ft.; 7-in. csg. 969 ft.; S.D.

Taylor Ref. Co. No. 1 Ihlenfeldt, Willis West Sur. T.D. 1,837 ft.; abd.

Wilson County

Stapper Oil Co. No. 1 J. McDaniel, L. Manchoca Sur. S.D. 933 ft.

Zapata County

R. B. Bryant No. 1 Flores, La. Huerta Sur. T.D. 1,556 ft.; stk. D.P.; jnkd. hole; skd. drk. 45 ft. north; T.D. 2,810 ft.

Guinn Lewis No. 1 Benavides, Fansler and O'Hern Subd. T.D. 2,500 ft.; abd.

EAST TEXAS

(Border counties)

Rodessa—Cass County

R. W. Norton No. 6 Moore, Meyers Sur. Drlg. anhy. 5,388 ft.

Union Prod. Co. No. 2 Carter et al, Bryant Sur. Cg. 5,908 ft.

Bowie County

King Oil Corp. No. 1 Watts, Geo. Brinlee Sur. Drlg. sh. 4,557 ft.

Harrison County

Ark.-La. Gas Co. No. 1 C. M. Abney, E. Little Sur. Set 7-in. csg. 2,350 ft.; set csg. 4,836 ft.; perf. 4,805-15 ft.; showed est. 30,000,000 ft. gas, spray S.W.; P.B.

Marion County—Rodessa

Ark.-La. Gas Co. No. 3 Holland, Hanks Sur. Drlg. L. 3,486 ft.

Gulf Oil Corp. No. 1 Smith, Hanks Sur. Drlg. L.&sh. 4,365 ft.

Heyser, Heard & Clardy No. 3-B Henderson, U. Ewing Sur. Set 5½-in. 6,038 ft.; T.D. 6,060 ft.; W.O. gauge.

Heyser, Heard & Clardy No. 4-B Henderson, U. Ewing Sur. Set 5½-in. 6,017 ft.; T.D. 6,040 ft.; comp.; 201 B.P.D.; ¼-in. ck.; T.P. 200 lbs.; C.P. 800 lbs.

Holcomb & Thomason No. 2-B Henderson, Ewing Sur. Drlg. L.&sh. 4,883 ft.

Hollandsworth Drlg. Co. No. 1 Brantley, Bennington Sur. Drlg. anhy. 5,545 ft.

Hollandsworth Drlg. Co. No. 1 Graham, Hanks Sur. Set 5-in. csg. 6,041 ft.; T.D. 6,062 ft.; comp.; 11 B.P.H.; ¼-in. ck.; perf. 6,028-37 ft.; T.P. 350 lbs.; C.P. 750 lbs.

Illinois Pet. Co. No. 1 Hale, Hanks Sur. Drlg. L. 4,100 ft.

Ohio Oil Co. No. 2 Moseley, Francis Sur. Drlg. L. 4,100 ft.

Phillips Pet. Co. No. 1 Beard, Bennington Sur. Set 7-in. csg. 6,088 ft.; T.D. 6,100 ft.

Shell Pet. Corp. No. 1 Boykin, Gentry Sur. Set 5-in. csg. 6,084 ft.; perf. 6,070-79 ft.; T.D. 6,091 ft.; comp.; 205 B.P.D.; ¼-in. ck.; T.P. 200 lbs.; C.P. 1,400 lbs.

Shell Pet. Corp. No. 1 Goodrow, Hanks Sur. Set 5-in. csg. 6,032 ft.; perf. 6,008-28 ft.; comp.; 151 B.P.D.; ¼-in. ck.; T.P. 2,000 lbs.; C.P. 2,225 lbs.; T.D. 6,026 ft.

Shell Pet. Corp. No. 2-B Henderson, Bennington Sur. Drlg. L.&sh. 4,650 ft.

Shell Pet. Corp. No. 2 Schulter, Smith Sur. Set 8⅝-in. csg. 1,006 ft.

Shell Pet. Corp. No. 3 Schulter, S. Smith Sur. Drlg. 206 ft.

Shell Pet. Corp. No. 1 Whelan, Thos. Gillespie Sur. Set 5½-in. csg. 5,966 ft.; T.D. 5,993 ft.; swbd. S.O.; acdzd. with 2,000 gal.; flwd. 6 B.P.H.; ¼-in. ck., with gas-oil ratio of 18,000 to 1; recmtd. csg. 5,993 ft.; acdzd. 1,500 gal.; installed flow valves; comp.; 139 B.P.D.; ¼-in. ck.; T.P. 0 lb.; C.P. 250 lbs.

Union Prod. Co. No. 8 Hutchinson, Coy Sur. Drlg. sh.&L. 4,876 ft.

Panola County

Mallard & Locke No. 1 W. E. Roller Est., Sullins Sur. Set 9⅝-in. csg. 761 ft.; W.O.C.

Texas Co. No. 1 Claude Adams, T. Cox Sur. Set 9⅝-in. csg.; drlg. 7,375 ft.

Shelby County

Center Oil Co. No. 1 Windham, A. H. English Sur. Cg. 3,406 ft.

WEST TEXAS WILDCATS

Andrews County

Atlantic Rfg. Co. No. 1 Texas Univ., sec. 26, Blk. 11, University Lands. W.O. 10-in. 1,074 ft.

H. S. Forgeron No. 1 Lockhart-Brown. Prep. cg. 4,400 ft.

Perkins, Wright & McMillan No. 1 Cowden. U.R. 7,699 ft.

Rhodes & Tompkins No. 1 Emma Cowden, sec. 1, Blk. 44, T.&P. Sur. Loc.

Rogers & Rogers No. 1 O. B. Holt, P.S.L. Sur. S.D. 4,541 ft.; pump 206 B.O.P.D. 760 ft.

Seaboard Oil Corp. No. 1 Munger-Nix, sec. 1, Blk. A-4, P.S.L. Sur. Tstg. on pump 5,426 ft.

Seaboard Oil Corp. No. 1 Thornberry, sec. 8, Blk. 42-A, P.S.L. Sur. Drlg. 4,626 ft.

J. C. Wheeler No. 1 T. M. Gardner, sec. 15, Blk. A-35, P.S.L. Sur. Tstg. 4,647 ft.

Bailey County

Duffey & Etz No. 1 Enochs, Tract 66, League 182, Floyd Co. School Lands Sur. Drlg. 4,185 ft.

Brewster County

H. D. Wilcox No. 1 Kokernot, sec. 12, Blk. C, J. V. Massey Sur. Drlg. 1,810 ft.

Cochran County

Devonian-Honolulu-Cascade No. 1-C-8 Duggan, sec. 8, Oldham C.S.L. Sur. R.U.R.

Heimerich & Payne No. 1 Westheimer & Daube, Lab. 14, Leg. 147. Drlg. 4,470 ft.

Honolulu Oil Co. No. 1-91 C. S. Dean, League 91, Lipscomb C.S.L. Sur. Drlg. 4,220 ft.

Texas Co. No. 1 Mallett Ld. & Cattle Co., sec. 7, Blk. G, P.S.L. Sur. P.B. 5,122 ft.

Coke County

H. E. Ogden No. 1 Rawlins, sec. 390, Blk. 1-A. Drlg. 3,355 ft.

Barnett Pet. Co. No. 1 J. R. Mims, sec. 39, Blk. W, T.&P. Sur. W.O.C. 1,635 ft.

Crane County

Gulf Oil Corp. No. 4 McKnight, sec. 3, Blk. B-21, P.S.L. Sur. Drk.

Magnolia Pet. Co. No. 1 University, sec. 16, Blk. 30, University land, 3½ mi. NW of Church-Fields pool. Drlg. cmt. 3,170 ft.

Crockett County

H. W. Black & Eubank Oil No. 1 University, sec. 13, Blk. 14, University Sur. W.O. 7-in. 1,280 ft.

W. L. Bradley et al No. 1 Hoover, sec. 1, Blk. 1. Tstg. 1,440 ft.

Choate & Hogan No. 1-H University, Univ. Sur., sec. 14, Blk. 14. Spudded.

Choate & Hogan No. 1-J University, sec.

15, Blk. 14, University Sur. Drlg. 1,445 ft.
Short & Gillette No. 1 J. W. Owens, Jose Zunegas Sur. S.D. 10-in. 393 ft.
W. F. Yates No. 1 Hoover, sec. 6, blk. 1, G.C.&S.F. Sur. S.D.O. 225 ft.

Culberson County

Harry J. W. Nichaus No. 1 C. M. Caldwell, sec. 15, Blk. 109, P.S.L. Sur. Drlg. 1,475 ft.
S. J. Isaacs No. 1 L. G. Sheddan, sec. 25, Blk. 52, P.S.L. Sur. Loc.
Quito Oil Co. No. 1 Cameron Lbr. Co., sec. 24, Blk. 81, P.S.L. Sur. Spd. and S.D.

Dickens County

J. F. Marrisey No. 1 I. J. McMahan, sec. 319, Blk. 1, H.&G.N. Sur. M.I. larger machine 1,050 ft.

Ector County

Stogner et al No. 1 Hendrick, sec. 4, Blk. 43, T.&P. Sur. Drlg. 3,060 ft.

El Paso County

Tri-State Oil Co. No. 1 Kinkel. Rng. 2-in. tbg. 3,571 ft.

Fisher County

Dibrell & Patton No. 1 J. B. Stribling, sec. 110, Blk. 3, H.&T.C. Sur. Spd. and S.D.
S. & D. Daube and Forrest Dev. Co. No. 1 A. C. Bennett, sec. 51, Blk. 2, H.&T.C. Sur. D.&A. at 1,725 ft.

Floyd County

Mills Bennett No. 1 T. Montgomery, F. J Latham Sur., 6 mi. S of Floydada Drlg. new hole 4,408 ft., last report.

Gaines County

C. M. Cope et al No. 1 Riley, Blk. G, sec. 249, W.H.R.R. Sur. Drlg. 4,405 ft.
Eastland Oil Co. No. 1 R. C. Dunbar, sec. 24, Blk. A-12, P.S.L. Sur. Tstg. 4,484 ft.
Finley & Cherry No. 1 P. W. Dalmont, sec. 6, Blk. A-21, P.S.L. Sur. Drlg. deeper 4,783 ft.
M. B. K. Drlg. Co. No. 1 A. L. Wassor sec. 52, Blk. AX, P.S.L. Sur. Comp.; 777 B.O.P.D.
Riddle & Warr No. 1 J. B. Brown et al, sec. 26, Blk. G, C.&M.R.R. Sur. M.I.M.

Garza County

Gulf Oil Corp. No. 1 Swanson, sec. 25, Blk. 2, H.&G.N. Sur. Drlg. 4,760 ft.

Glasscock County

O. B. Greathouse No. 1 Burns, sec. 221, Blk. 29, W.&N.W. Sur. S.D.R. 60 ft.

Hockley County

Gulf Oil Corp. No. 1 Mallett Ld. & Cattle Co., sec. 6, Blk. X, P.S.L. Sur. P.B. 5,037 ft.; tstg. 5,037 ft.

Howard County

H. N. Harriss No. 1 Guitar, sec. 17, Blk. A, Bauer & Cockrell Sur. R.U.
Lockhart Oil Co. No. 1 Scott, sec. 86, Blk. 29, W.&N.W. Sur. C.O. 2,865 ft.
Magnolia Pet. Co. No. 5 O'Daniel, sec. 34, Blk. 30, T.&P. Sur. R.U.S.T. 1,750 ft.
Moore Bros. No. 1 W. P. Edwards, sec. 44 Blk. 30, T.&P. Sur. D.&A. at 3,018 ft.
T. G. Shaw No. 1 H. N. Wilkerson, sec. 35, Blk. A, Bauer & Cockrell Sur. Loc.
Texas Co. No. 1 H. H. Wilkinson, sec. 32, Blk. 34, T.&P. Sur. C.O. 3,254 ft.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thax ton, SE¼ sec. 34, Blk. 74, Twp 6 Cmtg. csg. 4,320 ft.
Haymon Krupp No. 1 Briggs, sec. 24, Blk 73, Twp. 7, T.&P. Sur. Drlg. 4,010 ft.

Jeff Davis County

Joiner Oil Corp. No. 1 Jones-Coffield Drlg. 3,710 ft.

Kent County

Thad A. Bryant Jr. No. 1 Haggins et al, sec. 118, Blk. 1, H.&G.N. Sur. Bldg. drk.

Lynn County

John L. Baldridge No. 1 Alma Lbr. Co sec. 151, H.E.&W.T. Sur. W.O. 7-in. 4,450 ft.

Martin County

W. D. Anderson No. 1 J. R. Vance, sec. 9, Blk. 36, T.&P. Sur. Loc.

Menard County

Forest Dev. Co. No. 1 Corbell, J. H. Gibson Sur. No. 163. D.&A. 1,725 ft.
C. D. Haggerty No. 1 Callon, sec. 36, Jno Franz Sur. S.D. 445 ft.
Hartzell-Nawn & O'Hara No. 1 Wilhelm, sec. 24, Blk. A-1735, Indianola R.R. Sur. Drlg. 563 ft., last report.

Pecos County

Cox & Moore No. 1 White & Baker, sec. 43, Blk. Z, T.C.R.R. Sur. R.U.M.
Ed Fainey No. 1 Trees, sec. 63, Blk. 8, H.&G.N. Sur. Fsg. 2,055 ft.
J. D. Kugle, Jr., No. 1 W. C. Jackson, sec. 120, Blk. 8, H.&G.N. Sur. Drlg. plug 2,075 ft.
Carl S. Leidecker No. 1 Iowa Trust, sec. 73, Blk. 10, H.&G.N. Sur. S.D. 1,170 ft.
Magnolia Pet. Co. No. 1 McKee. Drlg. 5,892 ft.
E. R. Minshall et al No. 1 Haynie, sec. 28; Blk. 146, T.&St.L. Sur. Drlg. 887 ft.
S. Thompson No. 1 Elsinore Cattle Co sec. 54, Blk. D, G.C.&S.F. Sur. S.D. 7,212 ft.
Trans-Pecos Oil Co. No. 1 Gallagher, T.&P. Sur. S.D.O. 2,240 ft.
Trans-Pecos Oil Co. No. 3-A Papham G.H.&S.A. Sur. Drlg. 2,240 ft.; last report.

Presidio County

L. C. Brite No. 4 fee, C NW¼ sec. 113, Blk. 12, G.H.&S.A. Sur. S.D.O. 5,427 ft.

Reeves County

Grisham Hunter Corp. & N. A. Grisham No. 1 Geo. Daniel, sec. 40, Blk. 58, T.&P. Sur. Drlg. 2,895 ft.
Ohio Oil Co. No. 1 Papham, sec. 18, Blk 54, T.&P. Sur. C.O. 2,380 ft.; tools free.

Runnels County

Stevens & Glober No. 1 Fowler, sec. 150, E.I.R.R. Sur. S.D. 1,355 ft.

Scurry County

Coffield & Guthrie No. 1 E. E. Spears et al, sec. 130, Blk. 97, H.&T.C. Sur. Rng. 10-in. 605 ft.
Robinson Drlg. Co. No. 1 Martin, sec. 147, H.&T.C. Sur. S.D.O. 3,515 ft.

Sterling County

Loffland Bros. & Moore Bros. No. 1 D. D. Parramore, sec. 23, Blk. 2, H.&T.C. Sur. Fsg. 725 ft.
J. W. Sward No. 1 Brennand, sec. 107, Blk. 2, H.&T.C. Sur. S.D.R. 1,005 ft.

Stonewall County

Bert Fields No. 1 J. M. Lee, J. E. Pierson Sur. S.D. rotary 125 ft.
General Crude Oil Co. No. 1 J. D. Smith, sec. 371, Blk. 2, H.&T.C. Sur., 12 mi. N Rotan. C.O. 4,020 ft.
Swanson & Parriott No. 1 H. T. Carlisle, sec. 293, Blk. D, H.&T.C. Sur. Drlg. 4,045 ft.

Terry County

L. E. Hults No. 1 P. J. Ross, sec. 6, Blk. D-14, C.&M.R.R. Sur. R.U.S.T. 4,749 ft.

Tom Green County

Humble O. & R. Co. No. 1 Lewis & Ward law, sec. 5, Blk. 17, H.&T.C. Sur. Rng. electrical survey 7,586 ft.; last report.
Spinner No. 1 Reed, Mason Ferry Ranch Sur. Drlg. 4,480 ft.

Upton County

Flippen & Hancock No. 1 Shirk Est., sec. 7, Blk. 3, M.K.&T. Sur. W.O.C. 2,678 ft.; last report.
W. D. Riser et al No. 1 King Ranch Oil & Lignite Co., sec. 8, Blk. 3, M.K.&T. Sur. S.D. 730 ft.

Val Verde County

J. F. Carter et al No. 1 Seller & Sons, sec. 34, Blk. A, I.&G.N. Sur. Spd. and S.D.

Ward County

M. J. Delaney No. 1 J. E. Cooper, H.&T.C. Sur. Tstg. 2,092 ft.
J. E. Fitzpatrick et al No. 1 H. B. Carr sec. 125, Blk. 34, H.&T.C. Sur. S.D.R. 1,325 ft.
J. E. Fitzpatrick et al No. 1 F. K. Dyer, sec. 135, Blk. 34, H.&T.C. Sur. Drlg. 3,920 ft.
Hoss & Downey No. 1 Meyers, sec. 17, Blk. 32, H.&T.C. Sur. C.O. 1,945 ft.
Hoss & Downey No. 1 Ross Avery, sec. 36, Blk. 1, H.&T.C. Sur. S.D. 2,000 ft.
Mahree No. 1 Wilson, sec. 133, Blk. 34, H.&T.C. Sur. S.D. lost tools at 5,099 ft.
Patillo & Webster No. 1 Johnson: Tstg. 1,990 ft., last report.
John Poindexter No. 1 V. Meyers, sec. 17, Blk. 32, H.&T.C. Sur. Loc.
O. E. Schkode No. 1 Boogher, sec. 1, Blk. 32, H.&T.C. Sur. Tstg. 278 B.O.P.D.; S.I. storage full 2,078 ft.; prep. shoot 2,105 ft.
Texas Co. No. 1-F Univ., Univ. Sur., Blk. 16, sec. 15. R.U.S.T. 2,742 ft.

Winkler County

Ed. L. Gelder No. 1 R. D. Kessler & F. Kessler, sec. 14, Blk. B-3, P.S.L. Sur. Drlg. 2,960 ft.

Yoakum County

Gulf No. 1 J. C. Futch, sec. 796, Blk. D. J. H. Gibson Sur. S.D. 5,170 ft.
Gulf States Oil No. 1 Graham, sec. 267, Blk. 3, J.H. Gibson Sur. Drlg. 5,088 ft.
Helmerich & Payne No. 1 S. O'Dowd, sec. 896, Blk. D, J. H. Gibson Sur. Drlg. by bit and stem 4,955 ft.

E. C. TEXAS WILDCATS

Angelina County

J. C. Bonham No. 2 Cameron Lbr. Co., Miller Sur., 3 mi. SE of Zavalla S.D. 2,225 ft.
Ginter Bros. No. 4 Copes Heirs, J. Morin Sur., 3 mi. S of Diboll. R.U.M.
B. L. Hoffman No. 1 Jones, W. W. Hales Sur., 8 mi. SW of Huntington. S.D. 30 ft.

Camp County

W. C. McGlothlin No. 1 Joe Venters, S. Wright Sur., 3 mi. SE of Leesburgh. M.I.M.

Cherokee County

Bunn Drlg. Co. No. 1 C. Bounds, W. H. Walters Sur., 2½ mi. SE of Lone Star. Tstg. 4,015 ft.
Commerade Oil No. 1 J. M. King, W. Bartie Sur., 5 mi. W of Rusk. Drlg. 5,510 ft.

Dallas County

Markraley No. 1 R. S. Morris, C. Gibbs Sur., 2 mi. S of Grand Prairie. Drlg. 2,300 ft.
Plaza Oil Co. No. 1 Davidson, Marchants Sur., 1 mi. NW of Seagoville. S.D. 2,257 ft.

Ellis County

Julian Ivy No. 1 Sadie Serf, C. J. Chambers Sur., 6 mi. E of Alma. Drlg. 130 ft.

Gregg County

Sumble O. & R. Co. & Gulf O. Corp. No. 1 E. Robertson, M. Mann Sur., 2½ mi. SW of Longview Trinity test. El. 379 ft.; drlg. hd. sdy. sh. and strks hd. sd. 10,109 ft.

Henderson County

Hager & Jones No. 1 Coleman & Faulk, R. S. Rayburn Sur., 2 mi. NW of La Rue. Drlg. 1,720 ft.
Jones-Mallory No. 1 A. Mallory, T. S. Mitchell Sur., 6 mi. SW of Mabank. Drlg. 1,117 ft.
Texas Co. No. 1 I. A. Nolan Parsons Sur., 1 mi. SW of Flag Lake. Drlg. 2,370 ft.
Tyler & Smith No. 1 Phoenix Rity. Co., A. L. Adams Sur., 4 mi. S of Mabank. Drlg. 50 ft.

Houston County

Peyton Bros. No. 1 J. N. Daniels, J. M. Procella Sur., ½ mi. N of Procella. S.D. 6,046 ft.
Sun Oil Co. No. 1 R. S. and H. H. Daily, J. G. Thompson Sur., 3 mi. SE of Navarro Crossing. Drlg. 2,580 ft.

Limestone County

J S. Cosden, Jr. No. 1 J. J. Bower, J Breeding Sur., near Prairie Hill. S.D. 950 ft.

McLennan County

Chapman & Kahn No. 1 Carl Hartsman, B. C. Walters Sur., 1½ mi. S of Mc Gregor. S.D. 1,326 ft.
Kilgore No. 1 J. M. Marrs, J. S. Rutland Sur., 2 mi. S of Bosque. Drlg. 1,425 ft.
Lisle Steele No. 1 C. H. Cherry, M. Martinez Sur., 4½ mi. SE of Waco. W.O.C. 40 ft.
Russell & Thompson No. 1 L. L. Phillips, C. O. Campo Sur., 4 mi. S of Waco. Drlg. 740 ft.

Madison County

C. K. Handy No. 1 D. G. Cannon, D. Arriola Sur., 6 mi. NW of Madisonville. Drk.

Navarro County

Mrs. Jane Robinson No. 1 Fortson Bros. Eli Smith Sur., 5 mi. NE Corsicana Drlg. 2,690 ft.

Red River County

Daniels et al No. 1 J. J. Gaston, J. Guest Sur., 2 mi. S of Detroit. Bldg. drk.
Texas Trading Co. No. 2 So. Pine Lbr. Co., D. D. Bruton Sur., 12 mi. N of Clarksville. Drlg. 156 ft.
Walters et al No. 1 Phamplin, W. Moore Sur., 3 mi. SE of Kanawha in NW part of county. W.O.C. 68 ft.

Rusk County

J. W. Merrick et al No. 1 Peter Tipps, T. Uzzell Sur., 6 mi. S of East Texas field and 5 mi. N of New Salem. Deepening from 3,888 ft.; drlg. 3,954 ft.

Smith County

H. L. Hunt et al No. 1 S. H. Bradly, T. P. Payne Sur., 10 mi. E of Tyler at Chappel Hill. Fsg. 7,528 ft.

Trinity County

Boone & Jordan No. 1 U. S. Crouch, Joel Clapp Sur., 7 mi. N of Trinity. W.O.C. 200 ft.
Gassage et al No. 1 Mrs. C. H. Elliot, Joel Clapp Sur., 6½ mi. N of Trinity. Drk.

Upshur County

E. J. Dupree No. 1 W. A. Lawrence, R. Polly Sur., 4 mi. S of Gilmer. P.B. 3,520 ft.; tstg.
Tom Hunter and American Liberty No. 1 J. P. Carter, J. H. Fields Sur. Drlg. 8,891 ft.

Van Zandt County

Hines & Hancock No. 1 J. L. Chitty, N. Neal Sur., 7 mi. SW of Canton. O.W. T.D. 2,180 ft.; R.U. to deepen.

NORTH TEXAS WILDCATS

Archer County

Adams O. & G. Co. No. 1 C. Moer, sec. 21, C.&P. Sur., Blk. 3. Drlg. plug. 4,124 ft.
Burns & Omohundro No. 1 Dr. A. B. Edwards, Blk. 44, L. P. Hunt Subd., 5,300-ft. test. Loc.
Camp Drlg. Co. No. 1 H. Harmel, sec. 2,460, T.E.&L. Sur., 4,000-ft. test. Drlg. 3,600 ft.
Fain-McGaha Oil Corp. No. 1 R. W. Fuller, Blk. 1, H.&T.C. Sur., 6,000-ft. test. Drlg. 4,810 ft.
Harvey Drlg. Co. No. 1 J. J. Perkins, sec. 7, A.N.T.C.L. Sur. Drlg. 1,450 ft.
Helmerich & Payne et al No. 2 L. F. Wilson, Blk. 25, A.T.N.C.L. Sur. Testing at 5,105-16 ft.
Hines & Hancock No. 1 J. L. Anderson, Blk. 23, Anderson ranch, 4,000-ft. test. Drlg. 2,910 ft.
Hines & Hancock No. 1 W. R. Hammond, H. Corzine Sur. A-56. Drlg. 1,770 ft.
Kilgore-Luginbyhl & Johnson No. 1 Ford, T. M. Cecil Sur. A-982. 4,500-ft. test; Drlg. 4,110 ft.
Thos. A. Jirik No. 1 Kunkel, sec. 2, P.R.R. Sur. A-1186. Drlg. 200 ft.
Lacreta Pet. Co. No. 1 L. H. Farmer, W. C. Winters Sur. A-663, 4,000-ft. test. Drk.
Reno Oil Co. No. 10 H. Wilmut A, sec. 4, S.P.R.R. Sur. A-1044. S.S.O. 3,760-66 ft.; 6⅝-in. 3,750 ft.; W.O.C.
Shappell Oil Co. No. 1 Grace Bell, Blk. 27, Clark & Plumb Sur. Drlg. 3,100 ft.
Thurman & Lipscomb No. 1 L. F. Wilson, Blk. 22, A.T.N.C.L. Sur., 4,000-ft. test. 6⅝-in. 3,944 ft.; W.O.T.

Baylor County

Riddels, Pipes & Holcomb No. 1 W. H. Nichols, Jr., sec. 117, B.B.B.&C. Sur. A-85. Loc.
Wilcox O. & G. Co. No. 1 W. H. Portwood, sec. 3144, T.E.&L. Sur. Drk.

Clay County

Walter Gant No. 1 Bryant Edwards, S. C. Beldon Sur. A-12, 6,000-ft. test. S.D. 4,713 ft.
Healdton O. & G. Co. No. 1 Wallace, Belcher Subd. Drlg. 5,660 ft.
Joe Rogers No. 1 C. P. Davis, Blk. 6, Montague Co. School Land Sur. A-307, 4,500-ft. test. Spdg.
Wood Pet. & Roy. Corp. No. 1 I. H. Kempner, Blk. 44, Bosque Co. Sch. Ld. Sur. A-10. Drlg. 2,110 ft.

Cooke County

Sinclair Prairie Oil Co. No. 1 J. M. Best, T. Toby Sur. A-1,054. Drlg. 4,563 ft.
Sunset Oil Co. No. 1 J. T. Donald, S.P. R.R. Sur. A-971 3,500-ft. test; S.S.O. 2,473-94 ft.; S.D.O.

Foard County

Texas Co. No. 16 Johnson, sec. 37, S.P. R.R. Sur. Gas sd. 3,538-58 ft.; 6⅝-in. 3,530 ft.; drlg. plug.

Jack County

Noah Daves No. 1 K. D. Baker, sec. 2709, T.E.&L. Sur., 4,000-ft. test. Drlg. 1,700 ft.
Harper Pet. Co. 1 Mary E. Norman. A. Pearson Sur. A-1304. O.S. 1,937-38 ft.; testing.

Montague County

H. H. Powell No. 1 Arch Durham, W. J. Wagoner Sur. A-936. S.D. 822 ft.
W. Sorrell et al No. 1 J. E. Walthall Sam H. Smith Sur. A-662. S.D.O. 3,725 ft.

Wichita County

C. W. Boller No. 1 S. Y. Collins, Charles Roberts Sur. A-540. 6⅝-in. 3,855 ft.; brkn. sdy. L. and O.S. 3,860-3,900 ft.; testing.
Geo. W. Cooper No. 1 Parker, sec. 13, H.&G.N. Sur. Drlg. 3,610 ft.
Madden & Goldsmith No. 1 Jackson, Blk. 20, Denton Co. Sch. Lds. Drlg. 4,120 ft.
Shell Pet. Co. No. 1 Reilly, F. Jordan Sur., Abst. 167 ft. Drlg. 3,590 ft.
E. J. Stump No. 1 F. C. Dodson, J. Deck Sur. A-52. R.U.R.

Wilbarger County

Republic Nat. Gas Co. No. 1 W. T. Waggoner, sec. 2, H.&T.C. Sur., Blk. 4, 4,000-ft. test. Drlg. 2,475 ft.

Young County

Byars & Henny No. 1 Street, sec. 303, T.E.&L. Sur. Drlg. 2,465 ft.
Cosden Oil Co. No. 1 Price, Y.C.S.L. Sur. No. A-1285. Drlg. 2,425 ft.
Cosden Pet. Corp. No. 1 D. R. Sewell B, J. Bray Sur. A-1949. Drlg. 2,530 ft.
Fain-McGaha No. 1 Logan, Blk. 18, Holeman Sur. Drlg. 1,700 ft.
A. N. Munhall No. 1 Ed Johnson, A. McLennan Sur. A-185. 6⅝-in. 3,935 ft.;S.L. 3,990-4,350 ft.; testing; flwd. while rng. 5⅞-in.

RANGER (CENTRAL TEXAS) DISTRICT

Callahan County

Cooper, Weeks & Hughes No. 1 C. D. Straley, 660 ft. from W L., 1,880 ft. from N L, sec. 370, Geo. W. Denton Sur. Ordovician test; drlg. 3,100 ft.
Joe Gallagher No. 1 W. T. Harris, 200 ft. from S line, 1,050 ft. from E line sec. 347, G. W. Denton Sur. 2,000-ft. test, 5 mi. N Oplin. S.D. at 400 ft.
J. H. Howell No. 1 E. I. Vestal, 1,149 ft. E line, 1,000 ft. N line, Jesse Dyson Sur., 2 mi. NE Cross Plains, rotary to 4,000 ft. Surf. to 100 ft.; S.D. at 600 ft.
J. C. Jackson et al No. 1 Thompson, 2 mi S. Eula, sec. 30, B.B.B.&C. Sur. S.D. 1,803 ft.; drlg. 2,390 ft.
Petroleum Drlg. Co. No. 1 Cook & Jordan, 760 ft. from E L, 1,838 ft. from N L, sec. 350, Geo. Hancock Sur. Ordovician. R.U.R.
Wittmer Oil & Gas Properties, Inc., No. 1 R. D. Williams et al, 300 ft. from N line, 467 ft. from W line sec. 2,269, T.E.&L. Sur., 2 mi. NE Putnam, 4,500-ft. test. Set 12½-in. at 1,048 ft.; show oil 1,795-1,803 ft.; set 10-in. 2,556 ft.; drlg. 3,905 ft.

Coleman County

Anzac Oil Corp. et al No. 1 Sparkman, Samuel Crooks Sur. Drlg. 1,599 ft.
Anzac Oil Corp. No. 1 Burk, A. Williams Sur. Drlg. 55 ft.
S. M. Devine et al No. 1 Masterson, 2 mi. W of Burkett, Asa Wickson Sur. Drlg. 1,837 ft.
Garrett Oil Co. No. 1 W. S. Smith et al., 4 mi. SE Coleman, J. Thiele Sur. 2,300-ft. test; T.D. 2,035 ft., show gas; set csg. and tstg.

Comanche County

N. D. Gallagher et al No. 1 Mrs. B. I. Terry, Desdemona pool, N. H. Kuykendall Sur. S.O. in Ellenburger; 5 gal. sulfur and salt water on D.S. test; S.D.O. 4,978 ft.

Eastland County

Dobbs Oil Co. No. 1 Greer, J. E. Hardy Sur., Ellenburger test. Drlg. 60 ft.
Dorothy Oil Co. No. 1 Mrs. J. L. Johnson, 1,000 ft. from S line, 1,080 from

W line, E½ SW¼ sec. 29-4, H.&T.C. Sur. Rigging.

Hayner, Reaves & Hose No. 1 P. L. Larkin, 3 mi. NW Rising Star, 912 ft. from W line, 546 ft. from S line, NW¼ sec. 40-2, E.T.R.R. Sur. S.O. 2,525-53 ft. and 2,574-95 ft.; drlg. 2,910 ft.

Neil A. Moore No. 7 Holcomb Heirs, 970 ft. from W line and 600 ft. from N line, SW¼ 1-4, H.&T.C. Sur. Loc.

Fisher County

Forest Dev. Corp. & Daube No. 1 L. G. Bennett, 660 ft. from N & E lines, sec. 51-3. H.&T.C. Sur. Rotary to 4,500 ft.; 3 mi. SW of Rotan. Set 10-in. at 300 ft.

Owens-Snebold & A. C. Varner No. 1 J. H. Milsap, 3,500-ft. wildcat, 2 mi. NW McCaulley, 330 SL 330 WL, sec. 61-2, H.&T.C. Sur. Drlg. 1,400 ft.

Haskell County

Algord Oil Co. No. 1 J. F. Jones, 330 ft. from S and W lines, E. T. Roche Sur. No. 4, Abst. 525. Loc.

Fain-McGaha Oil Corp. No. 1 T. G. Hendrick, C W½ sec. 104, Indianola Ry. Sur. Set 150 ft. of 12½-in. S.S.G. 1,620-30 ft.; drlg. 2,460 ft.

Forest Dev. No. 2 A. E. Pardue, 2,100 ft. from N line, 550 ft. from W line, M. Collum Sur. No. 4. Drlg. 1,265 ft.

J. W. and A. E. McMillan No. 1 A. E. Pardue, 440 ft. from N and W lines, S½ M Collum Sur. No. 4 A-685. Rotary to 3 500 ft.; oil 2,810-54 ft.; cored 2,835-54 ft.; set 6-in. to T.D. and cmtd. 125 sacks; shot 39 perf. from 2,810-44 ft.; wtr.; shot 44 perf. 2,795 to 2,815 ft., filled 375 ft. in 15 min., set packer to cmt. off bottom wtr.; installing pump.

Jones County

Brown Eagle & C. J. Kleiner No. 1 Sullivan Heirs, 330 ft. S&E of 200-ac. tract in S. Andrews Sur. 191. Drlg. 1,787 ft.; U.R. 8-in.

Mack Hayes and Montour Oil Co. No. 1 Chittenden, 7 mi. SE Hamlin, Subd. 1 McMullen & McGloin Sur. 337. Oil 3,004-22 ft., T.D.; made 5-min. head of 40 bbls.; pumped 144 B.O. in 8 hrs.; cmt. 6-in. at 2,993 ft.; comp. 190 B.O. P.D. on potential gauge.

L. A. Hedrick No. 1 W. D. Baker, 220 ft. from N&W lines 3½ NE¼ sec. 36-O.A.L. U.R. 6-in. 2,190 ft., T.D.

Humble No. 1 Riley Horton, 330 ft. from N line, 330 ft. from E line, sec. 40-18-T.&P. Sur. Drlg. 800 ft.

Iron Mountain No. 1 D. J. Herbst, 5 mi. E Hamlin, 330 ft. from N and E Sub. 18, Austin Williams Sur. 339. Set 10-in 2,245 ft.; wtr. 2,900-05 ft.; H.F.W. 3,150 ft.; U.R. 8-in.

Chas. J. Kleiner No. 1 Mrs. A. E. Carlson, 333 ft. from S and E lines, NW¼ sec. 19-3, H.&T.C. Sur. Rigging.

F. W. Martin No. 1 B. N. Herndon, 330 ft. from S and W of NW sec. 1, M.E.&P. Sur. S.D. 2,700 ft.

F. W. Merrick et al No. 1 C. A. Cox, cent. Cox 119-ac. tr., J. H. Hughes Sur. No. 201. Sho. O.&W. 2,322-28 ft.; U.R. 6-in. to 2,340 ft.

Oil States Exploration No. 1 J. E. Sellers, 100 ft. from S line, 330 ft. from W line, S. Andrews Sur. 191. Spd.

Shaheen Oil Co. and Big Six No. 1 P. L. Telford, 220 ft. N and W lines, E½ SW¼ sec. 49-15, T.&P. Sur. Drlg. 1,990 ft. in L.

W. L. Snoddy & C. C. Dodson No. 1 C. L. Steffens et al, 220 ft. from S and W lines SW¼ NE¼ sec. 32-15, T.&P. Sur. Drlg. 1,000 ft.

Stanton & Miller No. 1 Gaither, 4½ mi. N of Anson, sec. 38, B.B.B.&C. Sur. S.D. 2,180 ft.

Ungren & Frazier No. 1 W. E. Fellows, 990 ft. from N line, 330 ft. from E line, S½ sec. 25-15, T.&P. Sur. Drlg. 1,150 ft.

Joe A. Worsham et al No. 1 J. H. Commons, 330 ft. from E line, S½ E 80-ac. Subdiv. 8. A. W. Hill Sur. No. 4. Drlg. 3,135 ft.

Nolan County

Hantho-Nelson, Inc., No. 1 J. H. Withers, C SW¼ sec. 65-21, T.&P. Sur. Wildcat to drill 4,000 ft. Spd. to 200 ft. W.O. rotary.

Shackelford County

Danciger No. 3 J. E. McCown, 300 ft. from N and E lines, S½ SE¼ sec. 158, B.B.B. &C. Sur. Drlg. 2,400 ft.

Joe DeGrazier No. 1 Harbough, E cen. part of county, sec. 1,563, T.E.&L. Sur 4,500-ft. test; H.F.W. 2,185-95 ft.; drlg. 2,600 ft.

Forest Dev. & Helmerich & Payne No. 1 T. G. Hendrick, C sec. 1, A.B.&M. Sur. To deepen with rotary past 3,163 ft.

J. G. Hammond No. 1 Coker, 1,620 ft. from S line and 1,020 ft. from W line, sec. 159, B.B.B.&C. Sur. Drlg. 1,200 ft.

Ungren & Frazier No. 1 J. S. McKeever, 306 ft. from W line, 354 ft. from N line, NW¼ SW ¼ sec. 14-3, H.&T.C. Sur. 3,500-ft. test.; gas at 1,475 and 1,492 ft.; set 10-in. 1,539 ft.; est. 100,000 ft. gas 1,745 ft.; set 10-in. to 1,907 ft.; U.R. 8-in. at 2,510 ft.

Stephens County

Graham, Hafner, Lane & Inman No. 1 J N. Yocum, 5 mi. SE of Frankell, 250 ft. from N and E lines of farm or ap prox. 2,525 ft. from E line and 1,400 ft. from S line of John R. Carter Sur. Trt. 1,000 gal acid 3,575-90 ft.; est. 25-50 bbls. per day; drlg. 3,455 ft.

Lone Star Gas Co. No. 5 R. W. Brooks, 400 ft. E and S of C of sec. 54-7, T.&P. Sur. Ellenburger test 2½ mi. N of Van Parmer pool. Drlg. 2,160 ft.

Lone Star No. 1 J. S. McKee, 660 ft. from N line, 660 ft. from W line, sec. 41-7, T.&P. Sur. Drlg. 750 ft.

G. Willard Rich No. 1 J. W. Andrews, 330 ft. W line, 450 ft. S line, NW¼ sec. 39-7, T.&P. Sur. Set 12½-in. at 1,620 ft.; drlg. 3,300 ft.

Stonewall County

Bert Fields No. 1 R. P. Pierson, C of E 80-ac., E. A. & S. M. Lee Sur. Abst. 817. M.I.R.

General Crude Oil Co. No. 1 J. D. Smith, SW cor. county, 330 ft. from S and E lines of sec. 371, H.&T.C. Sur., Blk. 2. Set 13⅝-in. 2,119 ft.; set 10-in. at 3,508 ft.; cmt. 150 sacks; S.S.O. at 3,970 ft.; set 8-in.; drlg. 4,065 ft.

F. B. Parriott No. 1 H. T. Carlile, 330 ft. from S line, 990 ft. from E line, SW¼ NE¼ sec. 293, Blk. D, H.&T.C. Sur., rotary to 5,500 ft., 6 mi. NW of Swenson. Set 8¾-in. at 3,345 ft.; set 6-in. to 3,896 ft.; drlg. 4,070 ft.

Taylor County

Bert Fields et al No. 1 Sears, sec. 223, Blk. 64, H.&T.C. Sur. S.D.O. 3,606 ft., T.D.; abnd.

Lewis Production No. 1 L. Henslee, 330 ft. from E L of 234-ac. tract in J. A. Nabors Sur. No. 10 and sec. 27-17, T.&P. Sur., 4 mi. E of Merkel. Drlg. 400 ft.

Wichita Prod. Co. No. 1 J. H. Parramore, 592 ft. from E line, 400 ft. from S line, SW¼ sec. 81-14, T.&P. Sur. Drlg. 2,100 ft.

Throckmorton County

Jones & Stasney No. 1 C. T. Brockman, 330 ft. S line, 330 E line sec. 95, Comanche Indian Sur. Est. 5 to 10 million ft. gas 1,434-48 ft.; U.R. 10-in. 1,670 ft.

Marland-Drake No. 1 Dickie Bros., center T.E.&L. Sur. 2226. Drlg. 3,400 ft.

Morris & Spoonts No. 1 Alden Bros., NW cor. county, 1,350 ft. from E line and 5,210 ft. from S line of Raymond Sanches Sur. A-248. Drlg. 1,178 ft.

White & Duncan No. 1 Reynolds Cattle Co., 330 ft. from S and W lines, NE¼ sec. 83, Comanche Indian Reservation. Set 10-in. at 1,405 ft.; drlg. 1,800 ft.

Henry Zweifel No. 1 J. H. Lee, 4 mi. NE of Woodson, 930 ft. from E line and 2,011 ft. from S line of J. A. George Sur. Cg. 2,998 ft.

Rocky Mountain Area

(Continued from Page 137)

the Santa Rita Oil & Gas Co., principal producers, have no drilling wells at this time. The Texas Co. may hold its operations down to six or eight wells this year and possibly may go to eight or 10. Santa Rita has drilled only two wells. While several refineries are under construction and under negotiation to run on Cut Bank crude, none of them have yet begun taking crude from the field.

A. B. Cobb No. 1 Reagan-Jackson, SW SE NW sec. 5-32n-5w. R.U.

Nadeau Bros. No. 5 Farmers State Bank, CEL SE NE sec. 17-33n-5w. Drlg. 2,630 ft.

Glacier Prod. Co. No. 2 Eisler, SW NE SW sec. 5-33n-5w. Drlg. 2,315 ft.

K. D. Pardee No. 1 Drumheller, NE NW (C Lot 3), sec. 2-33n-6w. Drlg. 2,550 ft.

A. B. Cobb No. 1 State, C NE NE sec. 30-37n-4w. T.D. 2,592 ft.; S.D. until spring.

Lewis and Clark County

Lewis & Clark Oil Synd. No. 1 Heilman, NW NW SW sec. 11-18n-5w. Drlg. 2,455 ft.

Park County

Ben W. Ryan No. 1 Burgee, SE SW NW sec. 28-2s-11e. Drlg. 1,278 ft.

Toole County

Kevin-Sunburst had one completion and one new operation.

The Big West Oil Co. No. 7 Gunderson, CEL SE NW section 19-35n-2w, was dry and abandoned at 1,635 feet after acidizing with 1,000 gallons. It had the contact at 1,545 feet. It is a south offset to No. 6 Gunderson which pumped 20 bbls. per day.

Dr. B. A. S. Aronow No. 2 Government, SW SE SW section 18-35n-2w, in the Gunderson district, is a near completion. It merely cracked the lime cap at 1,646 feet when it began to flow, making 35 bbls. per hour and giving promise of making the record well for the past year or two. It is running tubing to test.

Bryant Brothers No. 1 Lashbaugh, NE SW NW section 34-35n-2w, which shut down for the winter at 850 feet has moved machine away.

Agen & Goeddertz No. 11 Goeddertz, SW NE SW section 23-35n-3w, reported a completion last week for 20 bbls. per day before acidizing, was acidized with 500 gallons and is pumping 50 bbls. per day.

Kluth & Burke No. 1 George, SE SW SE section 8-34n-2w. Drlg. 100 ft. (first report).

A. E. Crumley No. 11 Fryberger, C NW SE sec. 24-35n-3w. Drlg. 920 ft.

O. A. Nepstad No. 2 Haugen, NW NW NE sec. 11-35n-3w. Drlg. 710 ft.

Hamilton & Hamilton No. 4 Reeg, SE SW SE sec. 14-35n-2w. Drlg. 1,020 ft.

Boris A. S. Aronow No. 2 Govt., SW SE SW sec. 18-35n-2w. T.D. 1,646 ft.; tstg.

Fifty-six Pet. Co. No. 1 Keywood, C NW SW sec. 13-34n-4w. Drlg. 800 ft.

A. Beardslee No. 8 Swears, SE NW NW sec. 9-35n-2w. T.D. 890 ft.; fshg.

Rimrock Oil Co. No. 4 Schmidt, CSL SW NW sec. 29-35n-3w. T.D. 1,700 ft.; cmtd. 7-in.; W.O.C.

Pfabe & Engelking No. 2 Hurley, NE NE NW sec. 8-34n-2w. Loc.

Deloraine Oil Synd. No. 3 Solberg, SE SW NE sec. 29-35n-3w. T.D. 1,760 ft.; acid. 500 gals.

H. C. Morton No. 8 Morton, C SW NW sec. 24-34-2w. S.D. 590 ft.

Chas. Grant et al No. 1 Anderson, SE NE NE sec. 26-35n-4w. S.D. 2,109 ft.

West Kevin Community Lease, Inc., No. 1 McClary, SW NE NW sec. 3-34n-4w. T.D. 2,105 ft.; C.O. to rn. csg.

Yellowstone County

Broadview Dome Oil Co. No. 1 Stallinberger, NE NE SW sec. 18-3n-23e. S.D. 4,565 ft.

Riverton Oil Co. No. 1 Fox, CEL NW NE sec. 14-2n-23e. T.D. 1,795 ft.; cmtd. 8¼-in. on bttm.; R.U.S.T.

R. C. Tarrant No. 3 Sayre, SE NE SW sec. 26-3s-4e. Drlg. 750 ft.

UTAH

Daggett County

Mountain Fuel Supply Co. No. 3-B Murphy, NW NW SW sec. 23-3n-24e. Drlg. 3,500 ft.

Grand County

Utah Southern Oil Co. No. 1 Hyde, SE NW NW sec. 33-22s-22e. T.D. 6,715 ft.

Columbia Crude Corp. No. 1 Rath, NW SW SE sec. 12-25s-20e. T.D. 3,992 ft.; fshg.

Cane Creek Oil Co. No. 1 Govt., NW SW sec. 31-26n-21e. Drlg. below 1,500 ft.

Summit County

Longwell Pet. Co. No. 1, SE SW SE sec. 35-3n-5e. Drlg. 2,792 ft.; slight S.G.

NEBRASKA

Sioux County

Union Oil Co. of Calif. No. 1 Agate-15, NW SE SE sec. 15-28n-55w. Drlg. 4,100 ft.

NORTH DAKOTA

Williams County

California Co. No. 1 Kamp, C NW NE sec. 3-154n-96w. Drlg. 7,730 ft.

IDAHO

Through the courtesy of Fred H. Merritt, consulting engineer, of Weiser, Idaho, who has recently completed a survey of the Snake River Basin, the following summary of active operations in that district is obtained: Boise Dome Oil Co. near Boise, Idaho, have cemented 15¼-inch casing at 700 feet. Boise Petroleum Corp. is running 12½-inch casing at 1,200 feet. Dry Lake Oil Co., near Nampa, is carrying 15¼-inch casing at 300 feet. Jacobs-Dunn and others, near Payette, completed derrick, and are moving in combination drilling outfit. Garrett and others of Los Angeles and Denver are moving in drilling outfit west of Weiser, Township 11n, Range 6w, for a deep test. Pioneer Drilling Co. is surveying locations in Township 11n, Range 4w, and Township 12n, Range 4w, in Washington County, just north of Weiser.

N. Y.-Penn. Gas Fields

COUDERSPORT, Pa., May 14.—A new, apparently small, Oriskany sand gas producing area was opened in the extreme northwestern corner of Tioga County when the New York State Natural Gas Co.'s test on the W. A. Simmons farm, Brookfield Township, found a pay streak 3 feet in the sand during the past week. The Oriskany was found at 5,112 feet and at 5,115 feet the first gas show was encountered. It gauged 2,000,000 feet.

The new area is on the Harrison anticline and is about 3 miles east of the northeastern extremity of the Harrison field in Harrison Township, Potter County. A test drilled at an intermediate point between the Harrison field and the New York State Natural Gas Co.'s test last year by G. L. Cabot, Inc., was dry. The Cabot test was also in Brookfield Township. The Simmons farm well was reported drilling at 5,126 feet at the close of the week.

Opening of the new area was the outstanding development of the past week in the New York-Pennsylvania Oriskany area though two Woodhull field wells were completed and two others were reported in the sand.

New York Operations

Sylvania Corp. completed its test on the H. Hand No. 2 farm, Woodhull Township, Steuben County, at 3,934 feet with a total initial open flow of 4,700,000 feet. Top of the sand was at 3,901 feet. The initial rock pressure was 795 pounds.

New Penn Development Corp. completed a producer on the M. K. Husted farm, Woodhull Township, at 4,062 feet with an initial open flow of 3,840,000 feet. In this hole, the Onondaga was at 4,006 feet and the top of the Oriskany at 4,046 feet.

Woodhull tests which reached the Oriskany during the past week were the G. L. Cabot, Inc., test on the C. Groves No. 2 farm which topped the sand at 4,141 feet and was reported drilling at 4,149 feet and this operator's well on the Neva Husted farm which topped the sand at 3,924 feet and found the first gas, gauging 600,000 feet, at 3,924 feet. It was reported drilling at 3,941 feet.

Pennsylvania Operations

In Potter County Williamsport Oil & Gas Co. is shut down at 430 feet on the U. B. Russell farm, Sharon Township; New Penn Development Corp. is drilling at 4,135 feet on the John Hill farm, West Branch Township; Hanley & Bird are drilling at 2,940 feet on the Flora Rooks farm, Harrison Township; New York State Natural Gas Co. is drilling at 1,965 feet on the J. D. Morley farm, Bingham Township; Cunningham Natural Gas Co. is drilling at 580 feet on the Thomas Hart Estate farm, Oswayo Township, and G. L. Cabot, Inc., is drilling at 190 feet on the West Bingham Grange farm and is moving in on the Whitney-Duke farm, both in Bingham Township.

New York State Natural Gas Co. is drilling at 1,450 feet on the L. Dickinson farm, Gaines Township, and North Branch Co. is drilling at 960 feet on the C. D. Ackley farm, Clymer Township, two other Tioga County wildcats.

Market Record of Active Oil Stocks

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1938 High	1938 Low	Week ending May 14 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1937	1937 High	1937 Low	1936 High	1936 Low
72½	57	2,200	67	63	63½	Amerada Corp.	788,675	N.P.	50cQ	4-30-38	$2.00	114⅞	51½	125½	75
24	17⅝	4,100	22⅛	21⅝	21⅝	Atlantic Refining	2,663,999	$25	25cQ	6-15-38	1.00	37	18	35⅛	26⅝
19	12⅛	3,200	17¼	16¼	16½	Barber Co.	387,149	$10	75c	12-16-37	1.00	43⅜	10⅛	38½	21
16⅜	10⅛	13,200	14⅜	13½	13½	Barnsdall Oil Co.	2,250,344	$5	25cQ	5-2-38	1.00	35¼	10	28¼	14⅛
10½	7	19,400	9⅛	8½	8⅝	Consolidated Oil Corp.	13,919,417	N.P.	20cQ	5-14-38	.90	17⅜	7	17¼	11⅛
34⅜	21¼	8,300	29¼	26	26½	Continental Oil of Delaware	4,682,583	$5	25cQ	3-31-38	1.50	49	24	44⅞	28⅛
8⅞	5	5,400	7½	6⅝	6⅜	Houston Oil (new)	1,098,618	$25	....	10-17-30	....	17⅝	4⅜	13⅞	6⅜
22⅝	12¼	3,100	17⅞	16¼	16¼	Mid-Continent Petroleum	1,855,912	$10	25c	6-1-38	1.50	35⅜	14	30⅞	17¼
17¾	11	300	14⅛	13¼	13⅜	Mission Corporation	1,399,345	N.P.	25c	12-24-37	1.25	34	15	29⅞	16⅜
23	14⅛	5,600	19	17¼	17¼	National Supply	382,591	$25	$2 pf.‡	12-22-37	(‡)	41⅜	17⅝	75½	19⅞
14⅞	9⅞	37,300	11¼	9⅞	10	Ohio Oil Co.	6,563,377	N.P.	50cSA	12-15-37	1.00	22⅞	9	18	12¼
15⅞	10¼	200	10½	10½	10½	Pacific Western Oil	1,000,000	N.P.	75c	12-15-37	.75	29⅜	11⅜	23½	11⅜
9¼	7	No sales ..	..	..	..	Pan American Pet. & Trans.	4,702,945	$5	$1 •	12-21-37	1.00	17⅛	7	20⅝	12¼
42½	27¼	11,700	35¼	32⅝	32¾	Phillips Petroleum	4,449,052	N.P.	50cQ	6-1-38	2.75	64	30⅛	52⅜	38⅛
20	15	2,700	19⅛	18¼	18¼	Plymouth Oil Co.	1,029,800	$5	35cQ	9-30-37	1.65	29⅞	13	27⅜	11⅞
13½	8½	26,100	10⅝	9⅝	9¾	Pure Oil Co.	3,281,120	N.P.	25c	12-1-37	.25	24⅝	8¾	27⅞	16
7⅞	5	3,300	6⅛	5¾	5¾	Richfield Oil Corp.	3,285,120	N.P.	25c	12-24-37	.25	6⅛	4⅛	..	..
27½	15½	1,300	21⅜	20	20¼	Seaboard Oil of Delaware	1,224,283	N.P.	25cQ	6-15-38	1.00	54⅛	16	44	30½
18¼	10	4,700	13⅞	12⅝	12¾	Shell Union Oil	13,070,625	N.P.	50c	12-20-37	1.00	34¾	14⅞	28¼	14⅝
34¾	18½	2,200	25⅞	22¾	23½	Skelly Oil	1,003,949	$15	50c	12-15-37	1.50	60⅝	26½	47⅜	19½
16⅜	10¾	32,900	14⅛	13⅛	13¼	Socony-Vacuum	31,151,071	$15	25c	3-15-38	.80	23¼	13	17½	12½
33⅞	25⅛	12,600	31	27¼	27¼	Standard Oil of California	13,014,754	N.P.	35cQ†	3-15-38	2.00	50	27⅛	47⅝	35
35½	24¾	6,800	31	28⅞	29	Standard Oil (Indiana)	15,267,030	$25	25cQ	3-15-38	2.30	50	26½	48½	32¾
35½	32¼	No sales ..	..	..	..	Standard Oil of Kansas	112,837	$10	$5	12-20-37	5.00	43	30⅝	31	25
54⅛	39¾	20,300	50	48½	48⅞	Standard Oil of New Jersey	25,856,081	$25	$1.25SA†	6-15-38	2.50	76	42	70⅜	51⅛
57⅞	45	900	51	50⅛	50½	Sun Oil	2,316,484	N.P.	25cQ	6-15-38	$1 & 8% Stk.	77½	44½	91	70
3⅜	1¾	3,600	2⅝	2⅜	2⅜	Superior Oil Corp.	1,388,079	$1	....	....	....	7¾	1½	6¾	3
44⅞	32⅝	19,500	40¼	37½	37½	Texas Corp.	10,875,006	$25	50cQ	4-1-38	2.25	65⅛	34⅜	55¼	28⅞
4⅞	2⅝	3,200	3⅞	3½	3⅝	Texas Gulf Producing Co.	888,135	N.P.	10c	12-23-37	.10	9⅝	2	8⅞	4⅜
10⅛	7	2,200	9	8½	8¾	Texas Pacific Coal & Oil	888,237	$10	10c	6-1-38	.40	16⅝	5⅜	15¼	7½
15½	10⅛	7,400	13⅜	12⅜	12½	Tide Water Associated	6,369,175	N.P.	25cQ	6-1-38	1.20	21⅝	13½	21⅜	14⅜
21⅝	17⅛	3,600	19⅞	18⅝	18⅝	Union Oil of California	4,666,270	$25	30cQ	5-10-38	1.40	28¼	17½	28½	20¾
23½	20	1,000	20½	20	20	Union Tank Car Co.	1,200,000	N.P.	40cQ	3-1-38	1.60	31½	22	31⅝	22⅝
2¾	1⅝	200	2½	2½	2½	Wilcox Oil & Gas	424,839	$5	....	5-10-28	....	6¼	1¾	5¼	2¾

•Payable in 3½% notes. †Includes extras. ‡One-tenth share $2 preferred stock.

New York Curb Exchange

1938 High	1938 Low	Week ending May 14 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1937	1937 High	1937 Low	1936 High	1936 Low
9⅜	5	2,400	7½	7	7	American Republics Corp.	1,308,049	$10	30c	12-27-37	$0.40	10	6⅝	..	.
10¼	5¼	800	6⅞	6⅜	6¾	Bridgeport Machine Co.	260,000	N.P.	1.25	12-30-37	$2.00	21⅜	7	21	13¼
39	32½	100	34	33	33	Buckeye Pipe Line Co.	200,000	$50	50cQ	6-15-38	3.75	51½	36	50	39¾
110	97	No sales ..	..	..	..	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	3-21-38	7.00	123	95½	124¾	105
11	7¾	6,200	11	9⅞	10	Cities Service (new)	37,804,394	N.P.	....	6-1-32	....	5⅜	1½	7⅝	3
2⅜	1	1,800	1¼	1⅛	1⅛	Cosden Petroleum	399,687	$1	....	....	....	5½	1½	4½	1½
27½	17½	6,900	21½	19¼	21⅛	Creole Petroleum	6,974,356	$5	50cSA†	6-10-38	1.00	38¾	20¼	39	19⅞
8¾	5½	200	7	7	7	Darby Petroleum	351,390	$5	25cSA	1-15-38	.50	18⅝	6½	18⅛	9
3½	2	1,000	2¾	2½	2½	Derby Oil & Refining	263,162	N.P.	....	....	....	8⅝	2¼	6¾	1⅞
31	22⅝	100	23	23	23	Eureka Pipe Line	50,000	$50	$1Q	5-2-38	4.00	47½	24½	47½	38½
42⅞	33	3,900	37½	35½	36	Gulf Oil Corp.	9,076,202	$25	25cQ	4-1-38	1.00	63½	33	59	36
70	56	4,100	70	67¼	68	Humble Oil & Refining	8,923,935	N.P.	37½c	4-1-38	2.00	87	54⅞	80	57
19½	15	3,200	17⅛	16½	16⅞	Imperial Oil of Canada	26,919,871	N.P.	62½cSA†‡	6-1-38	1.25	24¼	14½	24½	19¾
8¼	6⅝	300	7⅝	7½	7½	Indiana Pipe Line	300,000	$10	30c	5-14-38	.80	15	5⅞	9¾	5½
31¼	23	6,600	26¼	25¼	26⅝	International Petroleum	14,247,088	N.P.	$1.25†‡	6-1-38	2.50	39½	23½	39⅝	32⅝
5	3¼	300	3¾	3⅝	3⅝	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	8¾	2⅜	5¾	2⅝
25½	15⅝	1,500	22	20½	20½	Lion Oil Refining	434,820	N.P.	50cQ†	12-24-37	1.50	34	12½	17¾	7⅜
9¼	6⅝	1,500	8⅛	7⅝	7¾	Lone Star Gas	5,382,723	N.P.	20c	4-20-38	.60	14¼	5¼	14¼	9⅞
9⅜	6½	4,800	7⅞	7	7½	Louisiana Land & Exp.	3,000,000	N.P.	20cQ†	12-15-37	.50	15¼	6¾	15⅝	9⅞
8⅜	6⅜	400	8½	8¼	8¼	Midwest Oil Co.	998,444	$10	50c	6-15-38	1.00	14⅝	6¼	..	..
5¼	4½	1,700	5⅝	5½	5½	Mountain Producers	1,682,182	$10	30cSA	12-15-37	.60	7⅞	4⅜	8⅜	5
14⅝	12⅛	700	14	13⅞	13⅞	National Fuel Gas	3,810,183	N.P.	25cQ	1-15-38	1.00	19½	12	23	17⅝
9¼	7⅝	1,300	8¼	8	8	National Transit	509,000	$12.50	55cSA	12-15-37	1.00	12½	7¼	15⅜	9¼
2⅝	1½	No sales ..	..	..	..	New Mexico and Arizona	1,000,000	$1	1c	12-1-36	....	5	1⅛	6⅝	1⅝
4½	4	100	4	4	4	New York Transit	100,000	$5	15c	4-15-38	1.00	5⅜	3⅞	6¼	4¼
6	4	No sales ..	..	..	..	Northern Pipe Line	120,000	$10	20c	6-1-38	1.00	12¾	5¾	9¾	4⅞
7⅜	3¾	80,000	5¼	3¾	5	Pantepec Oil	1,608,700	N.P.	....	....	....	9⅝	2¾	10⅛	3¼
3½	1⅝	400	2	2	2	Root Petroleum Co.	336,045	$1	25c	2-1-37	.25	13¾	2	19¼	4½
4	2½	400	2⅝	2½	2½	Ryan Consolidated	296,931	N.P.	....	....	....	6½	2¼	4¾	1⅞
5⅜	3⅜	No sales ..	..	..	..	Southern Pipe Line	100,000	$10	15cSA	3-1-38	.45	7¼	3⅞	7⅞	3¼
39	28¾	200	34	34	34	South Penn Oil	1,000,000	$25	50cQ†	3-31-38	3.65	56	35	44	32½
22¼	19½	No sales ..	..	..	..	Southwest Penna. Pipe Lines	35,000	$50	50cQ	4-1-38	2.00	42	20	60	44
18	15	1,500	16⅞	16⅛	16½	Standard Oil of Kentucky	2,604,790	$10	25c	3-15-38	1.50	21⅛	14¾	23⅜	17⅛
7½	6⅛	No sales ..	..	..	..	Standard Oil of Nebraska	166,403	$25	25c	3-29-37	.25	13¾	8	14⅝	11
22	16¼	200	18½	18¼	18¼	Standard Oil of Ohio	753,740	$25	25c	6-15-38	1.50	45	16	40	21¾
3¼	2⅛	1,700	2⅞	2½	2⅝	Sunray Oil	1,910,119	$1	10c	12-24-37	.25	4⅞	2	5	2⅝
4⅜	3½	500	4¼	4⅛	4⅛	Texon Oil & Land	336,028	$2	15cQ	3-31-38	.45	7⅝	2	9¾	5⅜
7⅝	4⅝	1,000	5¾	5⅜	5¾	Transwestern Oil Co.	750,000	$10	....	.....	....	13⅞	4⅝	..	..
5¼	2¾	24,800	4⅜	3⅞	3⅞	United Gas Corp.	7,818,959	$1	....	.....	....	13⅝	3	10¾	4

†Includes extras. ‡Payable in Canadian funds. §Of which $1 was in preferred stock.

PERSONAL

GEORGE WALTON sailed from New York last week to begin a period of foreign service in Rumania. He will be engaged in geophysical work for the Carter Oil Company.

RALPH T. ZOOK, president of the Sloan & Zook Co., Bradford, Pa., will serve as chairman of the standing committee on membership of the Independent Petroleum Association of America, it is announced by CHARLES F. ROESER, president. Serving with Mr. Zook are D. R. LAUCK, Lauck & Moncrief, Wichita, Kans., vice chairman; MARVIN LEE, Wichita, Kans.; W. W. WARNER, Nowata, Okla.; W. A. GOFORTH, Valley Osage Oil Company, Tulsa; PAUL W. PITZER, Pitzer & West, Breckenridge, Tex.; W. H. SLOAN, Sloan & Hightower, Midland, Tex., and R. L. UNDERWOOD, Underwood Drilling Company, Wichita Falls, Tex.

D. E. BUCHANAN, president of Hanlon-Buchanan, Inc., Tulsa, has concluded a week's stay in Great Britain and, accompanied by MRS. BUCHANAN, has departed for Continental Europe where the two will spend a month visiting points of interest.

ELMER E. BRYNER, general superintendent of the Minard Run Oil Company (Emery interests) in the Bradford field, Pennsylvania, was honored on his seventy-sixth birthday at his home in Custer City, Pa., when he was presented with a loving cup by the Custer City Chamber of Commerce. Mr. Bryner, who has been with the Lewis Emery interests 61 years, says he has no thought of retiring. His name has been placed in nomination with the International Petroleum Exposition for grand old man of the oil industry.

AUGUST P. DOLL, president of Valvoline Oil Company, has been elected to the board of directors of the Columbia Gas & Electric Corporation.

CHESTER CASSEL, assistant chief geologist of the Texas Company in California, has returned to his Los Angeles office after a vacation spent touring in Mexico with his family.

G. B. HIBLER, formerly chief chemist at the Skelly Oil Company's refinery at Eldorado, Kans., is now holding a similar position in the Idaho Refining Company's plant in Pocatello, Idaho.

L. H. LUKERT, geologist for the Texas Company in Tulsa, has been elected president of the Tulsa Stratigraphic Society, succeeding R. V. HOLLINGSWORTH, of the Shell Petroleum Corporation. LESLIE JOHNSON, of the Sunray Oil Company, is new vice president. MISS CONSTANCE LEATHEROCK, Tide Water Associated Oil Company, is secretary-treasurer.

K. A. MYGOL has been placed in charge of the Pure Oil Company's new geological office in Wichita Falls, covering the North Texas district.

H. V. SMITH has resigned as assistant superintendent of the Skelly Oil Company refinery in Eldorado, Kans., to take a position with the Barber Asphalt Company, Philadelphia, Pa.

ROBERT W. FYFE has been appointed assistant traffic manager of the Standard Oil Company (Indiana), it was announced last Monday by R. H. McELROY, vice president and traffic manager.

GEORGE D. JAGELS, P. J. HITT, T. H. JOYCE, and GEORGE J. ARBLASTER are directors named in papers for incorporation of the Columbia Oil Company of Los Angeles. The new firm is capitalized at $1,000,000.

B. FRANK BRIDGES, manager of the land department of the Gulf Oil Corporation, with headquarters in Tulsa, has been appointed manager of a new division being created to include Illinois, Indiana, Kentucky, Ohio, and adjacent territory. Mr. Bridges is to be transferred to Indianapolis, where headquarters for the new operations will be maintained.

AL BUCHANAN, vice president of the Texas division of the Mid-Continent Oil and Gas Association, has announced that the association will hold its annual convention in San Antonio next October 27-29. Mr. Buchanan will meet with other San Antonio oil men soon to select the "wildcat committee" which will work with Chamber of Commerce officials in drawing up plans for the convention.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Bureau of Mines experts, trying to convert Cushing field operators to the use of mud-laden fluids to seal gas in the formations and thus save it, complain of considerable antagonism since their work began. Some of the non-technical men seem to think gas is something to be rid of.

F. J. Bradford is elected secretary of the Parkersburg Rig & Reel Company.

Henry M. Flagler, 83, dies in Palm Beach from injuries received in a fall. He was one of the leading men in the growth of the Standard Oil Company and previously was a member of the firm of Rockefeller, Andrews & Flagler.

20 YEARS AGO

Fort Worth and Dallas are making efforts to become known as North Texas oil centers, a position heretofore monopolized by Wichita Falls.

Major Gordon Lilly, internationally known as Pawnee Bill, quits the show business for the oil business. He is part owner of an oil refinery at Yale, Okla.

The Oil Exchange Building in Oil City, Pa., has been sold for a price in excess of $100,000. Thirty years ago and before the price of crude oil was made by the transactions around the "bull ring" in this building.

10 YEARS AGO

John M. Lovejoy resigns as vice president and manager of Amerada Petroleum Corporation to head a new company backed by large eastern financiers. He will be succeeded by Allmand M. Blow.

J. C. McDonald, president of the Standard Oil Company of Kansas from 1911 until his recent retirement, dies in Battle Creek, Mich. He joined the Standard Oil Company of Indiana in 1889.

president and general manager of the southwestern division

Comer Plummer succeeds the late H. N. Cole as vice president of Pure Oil Company.

RALPH HALL, pilot in Richfield Oil Corporation's air fleet for 13 years, has resigned to join an airplane manufacturing concern.

HENRY WALES, Saturday Evening Post and International News writer, has purchased a producing well in the Fruitvale field of California in partnership with WILLIAM DE KOCH, consulting geologist.

FRANK A. MORGAN, director of exploration of the Richfield Oil Corporation, Los Angeles, Calif., has been elected a vice president. Mr. Morgan has been associated with Richfield since it absorbed Rio Grande Oil Company, for which he was geologist.

GEORGE P. BUNN, Phillips Petroleum Company, Bartlesville, Okla., has been named chairman of the 1938 subcommittee on natural gas (wet or dry) of the central committee on measuring, sampling and testing natural gas and natural gasoline of the American Petroleum Institute's division of production. The appointment was announced by F. E. RICE, chairman of the central committee.

T. E. WARD, president of the Oilfield Equipment Company of New York, spoke at a meeting of the Tulsa Crozier Club last Monday night on the foreign situation as it relates to the oil industry. Mr. Ward is president of the Mexico Pilgrims, an organization of oil men in the United States who have seen service in the Mexico fields. He recently returned from an extensive trip to Trinidad and Venezuela. J. P. FLANAGAN, independent oil producer, was chairman of the program. He was assisted by W. L. CONNELLY, J. J. CONRY, EMMETT DALY, ED LEROUX, J. R. MANION, J. K. McGOLDRICK, C. L. McMAHON, W. B. MORAN and R. B. PRINGLE.

PARAGRAPHS

A. W. SCHOFIELD, of Housch, Schofield & Thompson, Houston, drilling contractors, left for Miami, Fla., where he boarded a plane for Colombia, South America. He will be in charge of drilling operations for a subsidiary company of the Gulf Oil Corporation.

W. A. PRUETT, vice president of the Superior Oil Company of California, with headquarters in Houston, Tex., is back at his desk following a business visit to California. He made the return trip in the company's airplane, accompanied by W. M. KECK, JR., vice president in Los Angeles.

W. F. KNODE, of Corpus Christi, Tex., consulting petroleum engineer of Parker, Foran, Knode & Boatwright, left last week for Canada, where he will act as chairman of the Oil and Gas Conservation Board of that country. Mr. Knode, accompanied by his family, will be in Canada for several months. He was formerly chief petroleum engineer for the oil and gas division of the Texas Railroad Commission.

M. FERAND, C. A. LAMBERT, and N. SCHLUMBERGER, officials of "Pechelbronn," S. A., and RALPH P. BOLTON, managing director of Romano-Americana, S. A., were among the European oil men arriving in New York last week aboard the Normandie.

H. L. DOHERTY, head of the wide-reaching Doherty interests, was 68 years old last Sunday. In many offices of the Cities Service companies the birthday was observed Saturday as a holiday. In Bartlesville, Okla., headquarters of Cities Service in the Southwest, a picnic was held. Mr. Doherty, often referred to as the father of conservation in the oil industry, was born in Columbus, Ohio, and he got his introduction to the gas industry at the age of 12, when he started to work for the Columbus Gas Company as office boy.

DR. DONALD CHAPMAN, head of the department of geology at the University of New Hampshire, was the third speaker in a series of lectures given at Centenary College, Shreveport, La., under the auspices of the Shreveport Geological Society. He gave an account of his trip through the Soviet Union with the International Geological Conference.

REPRESENTATIVE FERNANDEZ, of Louisiana, is seeking inclusion in the second deficiency bill in congress, of an appropriation to provide for a new petroleum experimental laboratory at Louisiana State University. The proposed laboratory, under Bureau of Mines supervision, will be given a $50,000 federal appropriation, to be supplemented by $25,000 from the state, if Mr. Fernandez's proposal is followed.

CARL FISHER, oil operator of Wichita, Kans., has been elected president of the Derby Oil Company, with headquarters in Wichita.

MAX SHAFFRATH, pipe line superintendent of the Standard Oil Company of California's Kern River division, has completed his thirty-fifth year of service for the company, and has announced he will retire August 1.

J. H. SEDWICK, of Albany, Tex., chairman of the West Central Texas Oil and Gas Association's ad valorem tax committe, is busy compiling data for use in combating any future attempts to impose further taxes on the stripper areas of Texas.

H. PAUL GRIMM, independent oil operator of California, and until recently president of the Pacific Western Oil Company, has been elected president and a director of Bolsa Chica Oil Corporation of Los Angeles, replacing C. W. LORD, who resigned. Other new Bolsa Chica directors are DORA B. AUGUR, PAUL T. SUNDAY, and THOMAS SIMMONS. Re-elected directors are E. H. BLANCHE, R. R. TEMPLETON and C. E. BLOSSER.

BURDETTE BLUE, president of the Indian Territory Illuminating Oil Company, Bartlesville, Okla., has been named chairman of the Independent Petroleum Association of America's relations committee. F. M. PORTER, vice president-secretary of Wirt Franklin Petroleum Corporation, Oklahoma City, Okla., is vice chairman. Other members are ROLLA L. CLYMER, Eldorado, Kans.; JOHN B. ALLISON, McPherson, Kans.; J. S. NOLAND, Tulsa; E. L. SMITH, Dallas, Tex.; M. W. BLAIR, Wichita Falls, Tex., and R. C. JOPLING, Bartlesville. Mr. Blue has called a meeting for May 20 in Tulsa.

Oil Service Recognized

Award of the Redwood medal recently to Dr. A. E. Dunstan, chief chemist of the Anglo-Iranian Oil Company and a director of National Refineries, Ltd., was a recognition of distinguished services to the science and technology of petroleum by the Institution of Petroleum Technologists. The medal is awarded "not more than once in each year to a petroleum technologist of outstanding eminence, irrespective of nationality or membership in the Institution." Under these limitations the honor has been conferred upon three other men in the past.

DR. A. E. DUNSTAN

Doctor Dunstan, born in Sheffield, England, in 1878, was a foundation scholar of the Royal Grammar School and a scholar of University College, both at Sheffield. In 1899 he entered the Royal College of Science. Later he studied at University College, London, under Ramsay, and at East London College under Hewitt. He was elected a fellow of the Institute of Chemistry in 1918. He was head of the chemical department of East Ham Technical College from 1905 to 1915, when he joined the Anglo-Persian (now Anglo-Iranian) Oil Company. In the same year he was elected a member of the Institution of Petroleum Technologists. From that time date the important researches in the chemistry and refining of petroleum with which his name is associated. Doctor Dunstan was president of the Institution from 1929 to 1931 and has been a member of its council since 1919.

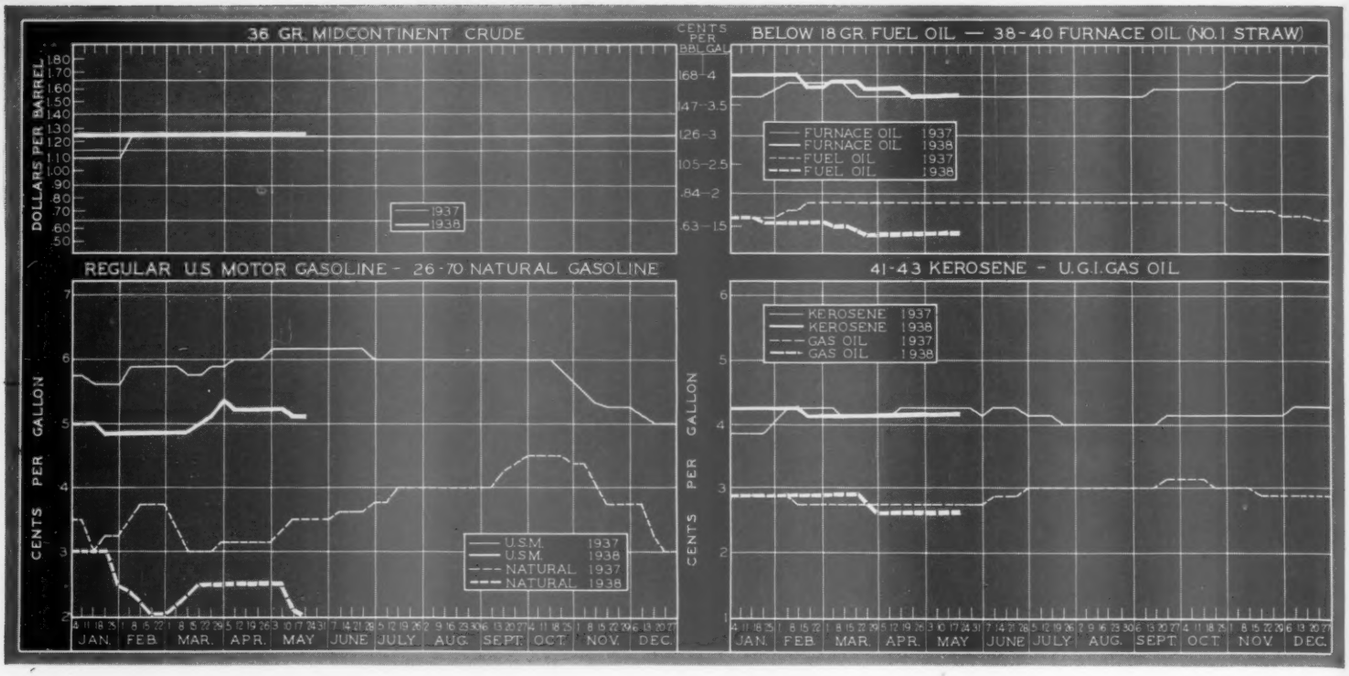
WALTER DUFFEY, Fort Worth, Tex., independent oil man, has left with his family for an extended vacation trip to Baltimore, Md., and other eastern points. He does not plan to return to Fort Worth until next fall.

J. N. DOUGLAS, assistant superintendent for the Western Gulf Oil Company, returned last week to his Bakersfield office after a trip to Independence, Calif., where he caught the limit of 25 trout on the first day of the fishing season.

F. C. CRAMER, C. B. MEANS, H. W. FARR, W. D. FARR, and C. D. CUNNINGHAM are directors of the Cunningham Oil Company, of Laramie, Wyo., which has filed incorporation papers. The company will operate in Albany County, southeastern Wyoming.

JACOB BLAUSTEIN, president of the American Trading & Production Corporation, announced last Friday the corporation planned to extend operations to include ocean transportation. Mr. Blaustein, who, with his father established the American Oil Company, said operations would include only oil tankers at first. The first of the company's tankers, the American Trader, left the Sun shipbuilding yards at Chester, Pa., last Saturday.

J. T. HAYWARD, Barnsdall Oil Company, Tulsa, has been appointed chairman of the 1938 central committee on drilling and production practice of the American Petroleum Institute's Division of Production by GEORGE A. HILL, JR., chairman of the general committee of the Division of Production. W. E. GILBERT, Shell Oil Company, Los Angeles, Calif., was named vice chairman, and CARL A. YOUNG, American Petroleum Institute, Dallas, Tex., secretary.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Spirits Rise Among Group 3 Refiners as Danger of Lower Prices Fades

By T. F. SMILEY

It seemed good to find Group 3 refinery sales managers in a more cheerful mood this week, for low spirits had threatened to become chronic. The gasoline market, for months a victim of untoward influences, was looking better. Prices, which had been slipping, were firmer. A week's withdrawal of 1,875,000 bbls. of gasoline from the country's overstuffed storage imparted a fresh feeling of hope. Refinery runs were getting in hand. Curtailment of crude production was becoming a fact instead of something to talk about. Distress stocks of motor fuel seemed to have vanished. Demand was increasing and the season of heavy consumption was getting close. An opinion commonly expressed was that a market bottom had been reached and that a rising trend now perceptible would carry through into midsummer.

Big Withdrawal at Gulf

Bureau of Mines figures for the week ending May 7 reveal that in the first really consequential drop in gasoline stocks since they definitely turned downward in April the withdrawals on the Texas Gulf Coast—1,024,000 bbls.—account for the major part of it. In the same area, which has been a particularly weak spot, the daily runs to stills fell 90,000 bbls. daily.

"I feel more optimistic than I have in months," declared one large independent refiner, who said he was sold up and looking for gasoline to supplement his own supplies.

Plant shutdowns and curtailment of operations continued to be reported. Announcement of the Shell Petroleum Corp. that it would close its refinery in Arkansas City, Kans., aroused comment. The company gradually is withdrawing from marketing activities in Kansas, Oklahoma, Nebraska, and the Dakotas because of the low prices obtainable for oil products. It is understood that jobbers who have handled Shell goods for years are establishing new connections. Action of the Texas Corp. in cutting its runs to stills 25 per cent contributed to the better tone of the motor fuels. The Longview plant of the East Texas Refining Co. was added to the idle list.

When the Kanotex Refining Co. reduced its crude prices 25 cents a barrel last week it spread a ripple of uneasiness throughout the Mid-Continent refining territory. It was feared other crude buyers might take similar steps, with the result that fairly large sales of gasoline were made at shaded prices. Signalizing the changed conditions reported this week was the fact that refiners who a short time ago were anxiously hunting buyers were now sold ahead. Others, with customers pressing for shipment, were making urgent inquiries for material. Offerings seemed to have dried up.

Naturals in Swift Drop

Natural gasoline, continuing its swift descent, went to 2 cents for the 26-70 grade in both Oklahoma and Texas, hitting the bottom of the price graph for the second time this year. Such spot market as there was revealed nothing remotely resembling strength, although belief was expressed that the decline had spent itself. Tankcars containing the overflow of small manufacturers have been standing on sidings in recent weeks waiting for bargain hunters to take them. A few large transactions at 2 cents were said this week to have cleaned up distress stocks pretty well.

The tractor distillates and range oil were in active demand. Kerosene and prime white, beneficiaries of the brisk market for tractor fuels, were firm. The outlook for this group until the end of the harvest season appeared excellent. A slight steadying of the lower-gravity heating oils was discernible and it was believed this material, which had been in need of help for weeks, at last had touched bottom. No change was noticeable in the neutrals and bright stocks, which continued to lack life. Heavy industrial fuel was laggard. Wax was weak.

Refined Oil Market Barometer

Gasoline market moving into more satisfactory position as some of its weak spots are removed through withdrawals from stocks and cutting of refinery runs. Rising consumption is adding to the healthier tone. Fear of reductions in crude prices is wearing off, and as the vacation season gets under way further stiffening of tankcar gasoline quotations is expected.

MID-CONTINENT. Gasoline firmer. Tractor fuels brisk. Naturals weak.

EAST COAST. Gasoline improving with heavy consumption. Kerosene dull.

GULF COAST. Gasoline and fuel oils dull. Kerosene weak. Market inactive.

CALIFORNIA. General market lacks life. No change in prices.

PENNSYLVANIA. Gasoline steadier. Lubricant shipments better. Kerosene weak.

CHICAGO. Poor motoring weather hurting gasoline, but outlook improving. Heavy fuels dull.

Gasoline Consumption Moving Upward in Northeastern Area

By H. STANLEY NORMAN

NEW YORK, May 17.—Stimulated by the start of vacation periods and summer activities within week-end driving range, the motor fuel consumption in the northeastern Atlantic section moved into high ground for the current season last week. For the first time since last fall the gasoline consumption in this section of the country was at or near the levels established in 1937.

The northeastern section has been particularly lacking in sharing the national increase in motor fuel consumption registered during the first three months, which, according to the Bureau of Mines report out last week, amounted to about 1.9 per cent for the entire country during January, February and March. Eight of the 12 states failing to participate in January and February increases, as reflected by tax returns assembled by the American Petroleum Institute, were in the New York area, including New England.

Since the latter part of April and more particularly during the first half of May this section has moved up the consumption column and is expected to close the month with a fairly representative share of the increase. Motor fuel movement is reported particularly heavy along the coastwise shipping lanes and several more cargoes will be loaded on the Gulf Coast for north Atlantic destinations the last of this month. Improved motor fuel business conditions have so far failed to alter the tankcar gasoline market in the New York harbor territory. Tankcars of 65-octane gasoline are available here at 6½ cents and the same grade of motor fuel can be obtained for 6¼ cents by barge delivery. There were rumors current last week that even the quoted prices had been shaded in some directions, but the Gulf Coast conditions appeared to discount the talk of weakness almost completely.

Gulf Coast refiners in general have elevated their high octane gasoline prices an eighth of a cent to a minimum of 5½ cents per gallon and some are even asking 5⅝ cents. Despite the low tanker rates currently prevailing, it is impossible for northern distributors to bring cargoes into New York harbor at less than 5⅞ to 5.9 cents per gallon, unless the Gulf Coast quotations are being shaded liberally by independent suppliers.

As in the recent past, most of the coastwise gasoline movement is against contracts negotiated during the end of last year and for dealers in that category it may be possible to shade the indicated minimum prices prevailing in the spot market. The substantial reduction of 1,875,000 bbls. in finished and unfinished motor fuel stocks during the first week in May, however, has imparted a more healthy aspect to the gasoline market and the continued brisk demand from this heavy consuming area is helping to erase some of the earlier summer gloom.

The alarm in the East has not reached acute proportions over the crude price structure, although it is freely admitted in practically all directions that continued delivery of East Texas oil aboard boats in Gulf Coast waters at concessions of 15 to 20 cents per barrel is far from a healthy condition. The promptness with which the Texas Railroad Commission and the Oklahoma Corporation Commission moved to halt the crude oil weakness received unstinted praise in eastern oil offices and the feeling is quite general that the current rough spot can be ridden out with the basic structure unchanged. Some eastern observers placed credit for the firm move in production retrenchment upon C. N. Boggs, president of Kanotex Refining Co., who reduced the price paid for Kansas and Oklahoma crude 25 cents per barrel. Action of the Texas Railroad Commission in extending its shutdown order to include remaining Saturdays in May as well as Sundays and that of the Oklahoma Corporation Commission in cutting 50,000 bbls. from the allowable to a top of 405,000 bbls. daily followed the Kanotex announcement promptly.

In contrast to the brisk movement of motor fuel, industrial fuel oils and the lighter domestic grades continue drifting. Kerosene prices are unstable and appear headed for lower ground in this district and in the western Pennsylvania refining territory. Heavy industrial fuel oil is reported selling in New York at 2¾ cents per gallon and top prices of 3 to 3⅛ or 3¼ cents per gallon for next winter and spring contract delivery are reported in the trade.

New tank-wagon prices for the 1938-39 heating season on No. 1, No. 2 and No. 4 fuel oil were issued last week by the Standard Oil Co. of New Jersey. The prices, appearing below, range from 6¼ cents per gallon at Newark and Atlantic City, N. J., for No. 4 fuel to 9½ cents per gallon for No. 1 fuel oil at Charlotte and Raleigh, N. C.

TANK-WAGON FUEL OIL PRICES

Station—	No. 1	No. 2	No. 4
Atlantic City, N. J.	8.0	6.25	6.25
Newark	8.0	6.25	6.25
Annapolis, Md.	...	6.75	...
Baltimore	7.5	6.50	6.50
Washington, D. C.	7.75	7.00	7.00
Norfolk, Va.	7.50	6.50	6.50
Petersburg	7.75	6.75	...
Richmond	7.75	6.75	6.75
Charlotte, N. C.	9.50	8.50	...
Hickory	...	8.75	...
Raleigh	9.50	8.00	...

South Carolina prices are to be announced at a later date.

The early announcement of fuel prices to apply to next winter's business is expected to overcome some reluctance on the part of prospective consumers to install oil heating equipment for fear that prices would move upward out of relation to other fuels. Based on the tank-wagon prices posted for Newark and Atlantic City, N. J., it is evident that the New York fuel oil prices will be approximately the same as existed during the past winter.

Some improvement was reported from western Pennsylvania in the movement of lubricating oil stocks, but it is mostly against contracts and in keeping with expectations for the season. Prices are unchanged from the preceding week, exclusive of one or two inter-refinery trades which were closed at less than the figures generally quoted to jobbers on open market business. Fuel oils in western Pennsylvania are following the general market elsewhere into lower ground. There has been no export

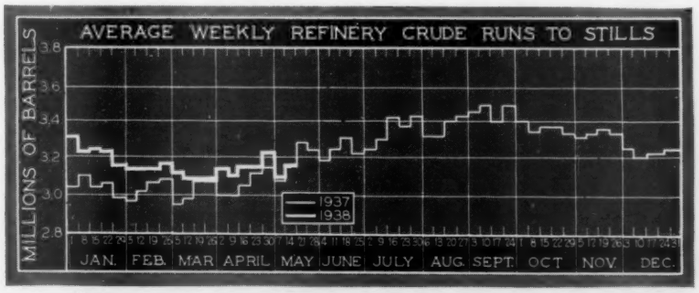
(Continued on Page 170)

A. P. I. Weekly Refinery Statistics

Week Ending May 14, 1938

	Capacity reporting (per cent)	Daily crude runs (bbls.)	Total gasoline stocks	Gas oil and fuel oil stocks
East Coast	100.0	465,000	22,823,000	10,612,000
Appalachian	88.4	104,000	3,375,000	1,355,000
Indiana, Illinois, and Kentucky	92.4	441,000	14,540,000	7,873,000
Oklahoma, Kansas, and Missouri	84.7	278,000	7,789,000	3,828,000
Inland Texas	56.6	125,000	2,471,000	1,597,000
Texas Gulf	95.7	747,000	12,479,000	8,649,000
Louisiana Gulf	96.6	140,000	2,372,000	3,220,000
North Louisiana and Arkansas	63.7	48,000	536,000	724,000
Rocky Mountains	69.7	51,000	2,269,000	808,000
California	90.9	498,000	15,253,000	88,944,000
Total reported	89.0	2,897,000	83,907,000	127,610,000
Estimated unreported	.....	273,000	4,740,000	2,640,000
*Estimated total	.....	3,170,000	88,647,000	130,250,000
*Estimated total, previous week	.....	3,080,000	89,464,000	129,848,000
*May 15, 1937	.....	3,135,000	80,378,000	95,316,000

*Bureau of Mines, currently estimated.



Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ending April 30, 1938	307,147,000 barrels
Week ending April 23, 1938	307,654,000 barrels
Week ending May 1, 1937	304,291,000 barrels

Retail Oil Markets

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of May 17, 1938

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and city taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Dlr.	Inc. tax	Kero. tank-wag.
Chicago, Ill.	15.6	13.6	4.0	10.5
Decatur	15.6	14.1	4.0	10.5
Joliet	15.6	14.1	4.0	10.5
Peoria	15.6	14.1	4.0	10.5
Quincy	15.4	13.9	4.0	10.3
Davenport, Ia.	15.6	14.1	4.0	‡10.5
Des Moines	15.4	13.9	4.0	‡8.3
Mason City	15.8	14.3	4.0	‡10.7
Sioux City	15.6	14.1	4.0	‡10.5
Duluth, Minn.	17.4	15.9	5.0	11.3
Mankato	17.0	15.5	5.0	10.9
Minneapolis	17.0	15.5	5.0	10.9
LaCrosse, Wis.	17.0	15.5	5.0	10.9
Green Bay	17.4	15.9	5.0	10.3
Milwaukee	16.8	15.3	5.0	10.7
Detroit, Mich.	15.3	13.8	4.0	10.0
Grand Rapids	14.8	13.8	4.0	9.7
Saginaw	16.3	14.8	4.0	9.3
Evansville, Ind.	17.1	15.6	5.0	†11.0
Indianapolis	17.3	15.8	5.0	†11.2
South Bend	17.6	16.1	5.0	†9.4
Fargo, N. Dak.	17.2	15.7	4.0	12.1
Minot	18.5	17.0	4.0	13.4
Huron, S. Dak.	17.5	16.0	5.0	11.4
Kans. City, Mo.*	14.9	13.4	4.0	9.8
St. Louis*	15.2	13.7	4.0	8.0
St. Joseph*	14.9	13.4	4.0	9.8
Wichita, Kans.	14.4	12.0	4.0	8.3

***State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.**

Exclusive of state general sales taxes. Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective Dec. 7, 1936, f.o.b. Chicago tank-wagon prices: Range oil, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.3 cents. Stanolex No. 1, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7 cents. Stanolex furnace oil, 1-149 gallons, 7.8 cents; 150 gallons and over 7 cents; Stanolex A, 1-399 gallons, 5.75 cents; 400 gallons and over, 4.75 cents. Stanolex B, 1-799 gallons, 5.75 cents; 800 gallons and over, 4.75 cents.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Tank-wag. dlr.	Tank-car con'r.	Inc. tax	Kero. tank-wag.
Atl'tic. City, N. J.	12.75	11.25	4.0	8.0
Newark	12.75	11.25	4.0	8.0
Annapolis, Md.	14.85	13.35	5.0	9.5
Baltimore	14.25	12.75	5.0	9.0
Cumberland	16.65	14.15	5.0	10.0
Wash'g'n, D. C.	12.5	11.0	3.0	9.5
Danville, Va.	16.95	14.45	6.0	12.9
Norfolk	15.75	13.25	6.0	11.5
Petersburg	16.05	13.55	6.0	11.7
Richmond	16.05	13.55	6.0	11.7
Roanoke	17.25	14.75	6.0	12.9
Charles'n, W. V.	17.05	14.55	6.0	12.6
Parkersburg	15.35	13.85	6.0	11.2
Wheeling	16.25	14.85	6.0	12.2
Charlotte, N. C.	18.65	16.15	7.0	12.6
Hickory	19.15	16.65	7.0	13.0
Mt. Airy	18.95	16.45	7.0	12.8
Raleigh	18.25	15.75	7.0	12.1
Salisbury	18.75	16.25	7.0	12.7
Charleston, S. C.	17.25	14.75	7.0	11.1
Columbia	18.25	15.75	7.0	12.1
Spartanburg	18.95	16.45	7.0	12.9

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5 cent per gallon.

Effective May 15, 1937, in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax counties): Commercial consumers taking deliveries of 50 gallons (W. Va., 100 gallons) or more at one time will be billed at posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons (W. Va., 100 gallons) will be billed at 4 cents per gallon over posted consumer tank-wagon price. Generally the posted consumer tank-wagon price will be the equivalent to the dealer price less .5 cent per gallon.

Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey.

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline Tank-wag.	Net dlr.	Inc. tax	Kero. tank-wag
Atlanta, Ga.	21.0	18.0	7.0	*14.0
Augusta	21.0	18.0	7.0	*14.0
Macon	21.0	18.0	7.0	*14.0
Savannah	19.5	16.5	7.0	*12.0
Birm'ham, Ala.	21.0	18.0	8.0	12.0
Mobile	21.0	18.0	9.0	11.0
Montgomery	21.0	19.0	9.0	13.0
Jackson, Miss.	19.5	16.5	7.0	*12.5
Vicksburg	19.5	16.5	7.0	*12.5
Jacks'ville, Fa.	22.5	17.5	8.0	11.0
Miami	20.5	17.5	8.0	11.0
Pensacola	22.0	19.0	9.0	12.0
Tampa	20.5	17.5	8.0	10.5
Lexington, Ky.	19.0	16.0	6.0	11.0
Covington	18.5	15.5	6.0	11.0
Louisville	19.0	16.0	6.0	10.5
Paducah	19.0	16.0	6.0	10.0

Price basis to tank-wagon consumers: Effective January 4, 1937, 3 cents per gallon below tank-wagon price. Kerosene prices in all states subject to 2 cents discount except in Kentucky where prices are net.

*Includes 1-cent state tax. †Subject to 2-cent discount.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax; and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Dealer	Inc. tax	Kero. tank-wag
Denver, Colo.	14.0	5.0	11.5
Grand Junction	19.0	5.0	15.0
Pueblo	13.0	5.0	10.5
Casper, Wyo.	17.0	5.0	11.5
Cheyenne	16.0	5.0	13.0
Butte, Mont.	19.5	6.0	15.5
Billings	19.5	6.0	13.0
Helena	19.5	6.0	15.5
Great Falls	19.5	6.0	15.5
Salt Lake City, Utah	18.0	5.0	16.0
Twin Falls, Ida.	21.0	6.0	18.0
Boise	21.5	6.0	18.0
Albuquerque, N. M.	17.5	*6.5	12.0

*Includes city tax of one-half cent.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Tank-wag. con'r.	Di-vided dlr.	Inc. tax	Kero. tank-wag.
Ohio points	16.5	15.5	5.0	*13.0

*Includes state tax of 1 cent.

New York and New England

SOCONY-VACUUM OIL CO., INC

	Gasoline Tank-wag.	Tank-car	Inc. tax	Kero. tank wag.
Albany, N. Y.	14.5	12.5	5.0	9.0
*Met. N. Y.:				
M'htt'n, Br'nx	14.0	12.5	5.0	8.75
Staten Island	14.0	12.5	5.0	8.75
Q'ns & Bklyn.	14.0	12.5	5.0	8.75
Buffalo	14.0	13.0	5.0	7.5
Rochester	15.0	13.2	5.0	8.5
Syracuse	14.5	13.1	5.0	9.0
Boston, Mass.	13.5	11.75	4.0	8.5
Portland, Me.	15.0	13.0	5.0	8.75
Manch'ter, N.H.	15.5		5.0	9.0
Burlington, Vt.	15.4	13.4	5.0	9.5

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point; monthly purchases under 5,000 gallons, pay divided dealer tank-wagon prices at delivery point.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank-wag.	Serv. sta.	Inc. tax	Kero. tank-wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	10.0
Fresno, Calif.	18.5	19.5	4.0	12.5
Phoenix, Ariz.	21.5	22.5	6.0	*17.5
Reno, Nav.	20.5	21.5	5.0	13.5
Portland, Ore.	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	13.5
Spokane	23.0	24.0	6.0	16.5
Tacoma	20.0	21.0	6.0	13.5

*Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: on tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Dlr.	Inc. tax	Kero. tank-wag.
Omaha	18.0	16.5	6.0	10.8
McCook	17.5	15.0	6.0	9.5
Norfolk	18.4	16.9	6.0	10.3
North Platte	18.8	16.9	6.0	11.2
Scotts Bluff	19.5	16.5	6.0	12.3

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective Jan. 1, 1935.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Tank-wag. dlr.	Tank-car con'r.	Inc. tax	Kero. tank-wag.
N. Orleans, La.	19.0	16.5	*10.0	†12.0
Baton Rouge	17.0	14.5	8.0	12.0
Alexandria	17.5	15.0	8.0	10.5
Lafayette	18.0	15.5	8.0	12.5
Lake Charles	18.0	15.5	8.0	12.5
Shreveport	16.5	14.0	8.0	9.5
Kn'xv'lle, Tenn.	20.0	17.5	8.0	14.0
Memphis	18.0	15.5	8.0	12.0
Chattanooga	19.5	17.0	8.0	13.5
Nashville	19.0	16.5	8.0	10.5
Bristol	19.0	17.75	8.0	14.5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery takes posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon. Louisiana kerosene prices include 1-cent state tax.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline Tank-wag. dlr.	Tank-car con'r.	Inc. tax	Kero. tank-wag.
Philadelphia, Pa.	13.75	12.25	5.0	10.0
Pittsburgh	15.0	13.0	5.0	10.5
Allentown	14.25	12.75	5.0	10.5
Erie	14.5	13.0	5.0	10.0
Scranton	14.5	13.0	5.0	10.5
Altoona	15.0	13.0	5.0	10.5
Dover, Del.	13.5	....	5.0	10.5
Wilmington	13.5	....	5.0	10.5
Springf'd, Mass.	13.5	....	4.0	8.0
Worcester	14.0	....	4.0	8.5
Hartford, Conn.	13.6	....	4.0	7.5
New Haven	13.5	....	4.0	8.0
Providence, R. I.	13.0	....	4.0	8.0

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract, less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Dealer	Inc. tax	Kero. tank-wag.
Muskogee, Okla.	14.5	5.0	7.0
Oklahoma City	13.5	5.0	8.0
Tulsa	14.0	5.0	6.0
Ft. Smith, Ark.	14.25	5.0	8.0
Little Rock	16.75	7.5	9.5
Texarkana	14.0	5.0	8.5

Texas

	Gasoline Tank-wag.	Serv. sta.	Inc. tax	Kero. tank-wag.
Dallas, Tex.	14.0	18.0	5.0	8.0
Fort Worth	14.0	18.0	5.0	8.0
Houston	14.5	19.0	5.0	8.0
San Antonio	13.5	17.5	5.0	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gallon lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank-wag.	Inc. tax	Kero. tank-wag.
Halifax, N. S.	24.5	10.0	18.5
St. John, N. B.	24.5	10.0	18.5
Montreal, Que.	21.0	6.0	17.5
Toronto, Ont.	22.0	6.0	17.0
Hamilton, Ont.	22.0	6.0	17.0
Winnipeg, Man.	27.5	7.0	20.7
Brandon, Man.	28.1	7.0	22.3
Regina, Sask.	27.0	7.0	22.0
Saskatoon, Sask.	29.8	7.0	24.9
Edmonton, Alta.	26.5	7.0	21.5
Calgary, Alta.	24.0	7.0	19.0
Vancouver, B. C.	23.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon price. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Retail Price Changes

Standard Oil Co. of Kentucky May 1 reduced tank-wagon kerosene .5 cent at Jackson and Vicksburg; April 14 advanced tank-wagon and dealer gasoline .5 cent, and May 3 reduced tank-wagon kerosene 1.5 cents at Miami.

Atlantic Refining Co. April 19 reduced dealer gasoline .5 cent at Dover; May 13 reduced dealer gasoline .5 cent at Wilmington; April 28 reduced dealer gasoline .5 cent in Springfield; April 8 reduced dealer gasoline .5 cent in Worcester; April 22 reduced tank-wagon kerosene .5 cent in Worcester and Hartford; May 5 reduced dealer gasoline .3 cent at Providence; May 13 reduced tank-wagon kerosene .5 cent at Providence.

New York Market

(Continued from Page 169)

business reported in the spot Gulf Coast market for the past two weeks. Some observers, however, anticipate that traders may enter the market to cover summer sales in the near future in view of the cut in production allowables and the failure of the Kanotex price cut to receive prompt support. There is evidence that some traders have held out of the export market thinking that an adjustment in crude prices would develop and that it might react in their favor in refined products. Only a few feelers were reported for gas oil export cargoes.

Prices of Refined Products

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of May 17, 1938

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 oct. and below	.04⅛	.04¼
63-66 octane	.04½	.04⅝
67-69 octane	.04¾	.04⅞
70-72 octane (regular)	.05⅛	.05¼
60-62 400 grades:		
62 oct. and below	.04⅛	.04¼
63-66 octane	.04½	.04⅝
67-69 octane	.04¾	.04⅞
70-72 octane (regular)	.05⅛	.05¼
64-66 375	.04¾	.04⅞
68-70 360	.05	.05⅛

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.04⅛	.04¼
63-66 octane	.04½	.04⅝
67-69 octane	.04¾	.04⅞
70-72 octane (regular)	.05⅛	.05¼
60-62 400	.04⅛	.04¼
64-66 375	.04¾	.04⅞

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U. S. Motor grades:		
62 octane and below	.04⅜	.04½
63-66 octane	.04⅞	.05
67-69 octane	.04¾	.05⅛
70-72 octane (regular)	.05½	.05⅝

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:		
62 octane and below	.04½	.04⅝
67-69 octane	.05	.05⅛
70-72 octane (regular)	.05½	.05⅝

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04¼	.04⅜
63-66 octane	.04½	.04¾
67-69 octane	.04¾	.05
70-72 octane (regular)	.05	.05⅜
60-62 400 grades:		
62 octane and below	.04¼	.04⅜
63-66 octane	.04½	.04¾
67-69 octane	.04¾	.05
70-72 octane (regular)	.05	.05⅜
64-66 375	.04¾	.05
68-70 360	.05	.05¼

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.05⅛	.05⅜
65 octane	.06½	.06¾
68-70 octane	.07	.07¼

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.06¾	.08¼
58-60 400, 65 oct. and higher	.08½	.09¼

EAST COAST (domestic)—

U. S. Motor, 60-64.9 octane:		
New York (Bayonne)	.06¼	.06½
Philadelphia	.06¼	.06½
Boston	.06½	.06¾
Baltimore	.06½	.06¾
Charleston, S. C.	.07	.07¼
U. S. Motor, 65 and above:		
*New York (Bayonne)	.06½	.07
Philadelphia	.06½	.07
Boston	.06¾	.07
Baltimore	.07	.07¼
Charleston, S. C.	.07¼	.07½

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane	.05	.05¼
60-64.9	.05¼	.05⅜
65 octane and higher	.05½	.05¾

Naphtha

PENNSYLVANIA (inland refineries)—

52-56 450 (blending)	.04¾	.05

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02
Grade 18-55	.02⅝	.02½

NORTH TEXAS—

Grade 26-70		.02
Grade 18-55	.02⅝	.02½

CALIFORNIA—

75-85 375-390	.06½	.07

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70	.02⅝

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110 flash, 540-550 e.p.	.04	.04⅛
41-43 gr., 300-520 i.b.p., 110-125 flash, 500-520 e.p.	.04⅛	.04¼
46-48 gr., 210-230 i.b.p., 480 max., e.p.	.04½	.04⅝

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.04⅛	.04¼
42-44	.04¼	.04⅜

NORTH TEXAS—

41-43	.04⅛	.04¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43	.04⅜	.04½

ARKANSAS (Ark., N. La., Miss. del.)—

41-43	.04⅜	.04⅝

PENNSYLVANIA (inland refineries)—

45		.04⅞
46		.05
47		.05⅛

CHICAGO (Based on Group 3)—

41-43	.04⅛	.04⅜
42-44	.04⅜	.04⅝

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.05	.06

NEW YORK (Bayonne, N. J.)—

41-43		.05¾

***GULF COAST (domestic)—**

41-43		.04¼

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03⅞	.04
No. 1 prime white, 38-42	.03⅝	.03⅞
No. 1 straw, 38-40	.03⅝	.03⅝
No. 2 straw, 32-36	.03	.03⅛
No. 2 dark, 32-36	.02⅞	.03⅛
No. 3 zero to 15, 28-32	.02¾	.03
No. 3, 15 and above, 28-32	.02⅞	.02⅞

NORTH TEXAS—

No. 1 prime white, 38-42	.03¾	.03⅞
No. 1 straw, 38-40	.03⅝	.03¾

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36		.03⅝

CHICAGO (Based on Group 3)—

Range oil	.03⅞	.04⅛
No. 1 prime white, 38-40	.03¾	.04
No. 1 straw, 38-40	.03⅝	.03⅞
No. 2 straw, 32-36	.03⅝	.03⅞
No. 2 dark, 32-36	.03¼	.03⅝
No. 3, zero to 15, 28-32	.03¼	.03⅝
No. 3, 15 and above, 28-32	.02⅞	.03

NEW YORK (Bayonne, N. J.)—

*No. 1		.05¾
*No. 2		.04¾
*No. 4		.04¾

*Barge deliveries one-eighth to one-fourth cent under above tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal.; fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.02⅝	.02¾
No. 4, low cold test, 24-28	1.05	1.10
No. 4, 15 and above, 24-28	.85	.90
No. 5, low cold test, 18-22	.70	.75
Below 18 fuel oil, industrial	.55	.60

NORTH TEXAS—

U.G.I. gas oil	.02⅝	.02¾
No. 4, low cold test, 24-28	1.05	1.10
No. 5, low cold test, 18-22	.70	.75
Below 18 fuel oil, industrial	.55	.60

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02⅝	.02⅞
No. 4, low cold test, 24-28	1.05	1.10
No. 4, 15 and above, 24-28	.85	.95
No. 5, low cold test, 18-22	.70	.77½
No. 5, 15 and above, 18-22	.60	.70
No. 6, low cold test, 10-16	.60	.70
No. 6, 15 and above, 10-16	.35	.45

PENNSYLVANIA (inland refineries)—

36-40	.03⅝	.03⅞

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.25	1.50
24 plus diesel, per bbl.	1.20	1.50
24 plus diesel (bunkers)	1.30	1.55
12-16 (bunkers at tidewater)	.90	1.00
10-16 (cargo lots)	.80	.90
12-17 (tankcars)	.60	.90
10-17 (high sulfur)	.55	.85
San Joaquin Valley:		
10-18 (tankcars)	.60	.85
24 plus diesel, per bbl.	1.30	1.50
San Francisco:		
24 plus diesel, per bbl.	1.45	1.55
24 plus diesel (bunkers)	1.55	1.65
10-16 (bunkers)		.95

GULF COAST—

28-30 gas oil	.03¼	.03½
28-30 diesel (bunkers)		1.75
Bunkers (bulk cargoes)	.72	.75
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.04¾
28-30 diesel (lighterage 6¼c per bbl.)		1.85
28-30 diesel (tankcars)	.04¾	.05
Bunker C (to ocean-going ships in N. Y. harbor)		1.05
Industrial fuel (tankcars)	.04	.04¼

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

190-200 D, 15-25		.19
150-160 D, 0-10	.14½	.16
150-160 D, 15-25	.13½	.15½
150-160 E, 15-25	.13	.15
100-110 D, 0-10		.14½
Steam refined:		
631 green (treated)		.13½
600 dark green (untreated)		.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour test	.16	.16½
15 pour test	.15	.15½
20 pour test	.14	.14½
25 pour test	.13	.13½
Steam refined:		
600	.08½	.09
650	.10½	.11½
600 Pennsylvania flash	.11	.13
630 flash	.14	.15
600 Warren E filtered	.13	.14

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:		
150-3		.09
180-3		.10
180-4		.09½
200-3		.10½
200-4		.10
250-3		.11½
250-4		.11
280-3		.12½
280-4		.12
300-3½		.13
400-3½		.14
100-2½ paraffin oil		.06
15-20 Cold Test:		
200-3		.10
200-4		.09½
250-3		.11
250-4		.10½
280-3		.12
280-4		.11½

GULF COAST—

Pale Oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08½	.08¾
750-3½	.08⅝	.09¼
1,200-3½	.09½	.09¾
1,500-4	.09¾	.10
Red Oils:		
200-5-6	.07¼	.07½
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08¾	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)—

Pale Oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red Oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F. color, 400-405 flash:		
Zero pour test	.15	.15½
10 pour test	.14	.14½
15 pour test	.13½	.14
25 pour test	.12½	.13
180 vis. at 70° F., 3 color:		
25 pour test	.14	.14½
200 vis. at 70° F., 3 color:		
Zero pour test	.16½	.17
10 pour test	.15½	.16
15 pour test	.15	.15½
25 pour test	.14	.14½

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale	.02¼	.02¼

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0190	.0200
124-126 (a.m.p.) w.c. scale	.0190	.0200

NEW YORK—

Wax in bags fully refined:	
122-125 (a.m.p.) wax	.0420
125-127 (a.m.p.) wax	.0435
128-130 (a.m.p.) wax	.0445
130-132 (a.m.p.) wax	.0455
133-135 (a.m.p.) wax	.0500
135-137 (a.m.p.) wax	.0515
124-126 (a.m.p.) w.s.	.0185
124-126 (a.m.p.) y.s.	.0185
Petrolatum in barrels, carload lots:	
Dark green	.02 .02⅛
Amber	.02⅜ .02½
Extra amber	.02⅝ .02¾
Lily white	.05⅛ .05¼
Snow white	.06⅛ .06¼
Cream	.04¼ .04¼

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.04⅞	.05
60-62 400	.04⅞	.05
61-63 390	.05	.05⅛
64-66 375	.05	.05⅛

LOS ANGELES—

U. S. Motor grades:		
55-65 octane	.05¼	.05½
65-69 octane		.05¾
Above 69 octane		.06¼

KEROSENE

GULF COAST—

41-43 prime white	.04⅜	.04⅝
41-43 water white	.04½	.04¾
44 water white		.04¾

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbls.)—

Cylinder Stocks:		
600 Warren E	.14½	.15
600 S.R. unfiltered	.15½	.16
630 S.R. unfiltered	.17½	.18
600 flash S.R.	.17½	.18
630 flash, S.R.	.21	.21½
Bright Stocks:		
8 color	.21½	.22
6½ plus color in dilution		.21

NEUTRAL OIL

200-3 color	.23½	.24
150-3 color	.21½	.22

PARAFFIN WAX

NEW YORK (prices per pound)—

123-126 a.m.p.		.0375
125-127 a.m.p.		.0387
128-130 a.m.p.		.0412
133-135 a.m.p.		.0437
135-137 a.m.p.		.0455
Crude Scale:		
124-126 w.s.	.0185	.0200
124-126 y.s.	.0185	.0200

Crude Oil Prices

Oklahoma, Kansas, North Central and East Central Texas

(Effective January 28, 1937)

East Texas (May 22, 1937)*	$1.35
Van, Tex.†	1.10
Camp Hill, Tex.	1.27
Cass County, Tex.‡	1.25
Talco	.73
Altus and Tipton, Okla.§	1.20
Other fields (see gravity table).	

*All companies. †Humble Oil & Refining Co.; Pure Oil Co. ‡Texas Co. §Gulf Oil Co. Talco by Humble Oil & Refining Co.

North Louisiana and Arkansas

Smackover, all grades	$ .90
Tullos and Urania	1.02
El Dorado East field	.90
Union County, Ark.	.90
Ouachita County, Ark.	.90
Lisbon, La. (Dec. 13, 1937)*	.98

*Caddo Crude Oil Purchasing Co.

Gulf Coast

(Effective January 28, 1937)

Choctaw and Darrow, La. See note below

Clay Creek, Tex.	$1.00
Garden Island, La.	1.37
Cleveland, Tex.	1.27
Hardin, Tex.	1.15
Lafitte, La.	1.24
Livingston, Tex.	1.27
Welsh, La.	.98
Tepetate (La.) (Jan. 28, 1937)	1.24

Duval, Jim Hogg, Webb and Zapata counties, Texas, and Heyser and Placedo fields take Mirando gravity prices. Jennings, La., 5 cents lower than Gulf Coast prices on each degree. Segno, Texas, takes Gulf Refining Co.'s Gulf Coast prices. Choctaw and Darrow, Louisiana, posted for first time by Standard Oil Co. of Louisiana, start below 21 degrees at 90 cents, with 3-cent differential up to 25 gravity, then 2 cent differential up to 40 and above, $1.36. Effective October 1, 1937, Stanolind Oil & Gas Co. in Evangeline, La., pays 92 cents for below 20 gravity, adding 2 cents for each degree upward to 40 and over, at $1.34.

Rocky Mountain States

(Effective January 28, 1937)

Iles, Colo., light*	$1.18
Iles, Colo., heavy*	1.12
Greybull, Wyo.*	1.30
Torchlight, Wyo.*	1.30
Grass Creek, Wyo., light*†	1.30
Grass Creek, Wyo., heavy (May 1, 1938)*	.50
Hamilton Dome, Wyo. (May 1, 1938)*	.45
Elk Basin, Wyo., light*†	1.30
Frannie, Wyo., heavy*	.62
Frannie, Wyo., light (May 1, 1938)*	.65
Hogback, N. M. (Jan. 28, 1937)*	1.33
Salt Creek, Dutton Creek and Midway, Wyo., take Stanolind's Oklahoma prices on a gravity basis.	
Big Muddy, Wyo.†‡	1.23
Rock Creek, Wyo.†	1.20½
Lea County, N. M. (see West Texas gravity table).	
Artesia, N. M. (Jan. 2, 1937)‡	.90
Maljamar, N. M. (Jan. 28,1937)‡	.90
Canon City and Florence, Colo.	1.10
Lance Creek, Wyo.*	.97
Lander, Wyo. (Jan. 1, 1938)§	.51¼
Sunburst, Mont. (Nov. 16, 1937)†	.90
Cat Creek, Mont. (Jan. 1, 1938)‡	$1.30
Garland, Wyo. (Jan. 1, 1937)†	.50

*Stanolind Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co. Texas Co. (April 1, 1938). §Hudson Oil Co.

Middle Western States

OHIO OIL CO.
(Effective January 28, 1937)

Lima	$1.00
Illinois	1.35
Princeton, Ind.	1.35
Midland, Mich. (Jan. 5, 1938)*	1.12
West Branch, Mich. (Dec. 29, 1937)†	.80
Buckeye (Jan. 8, 1938)	1.09½
Arenac, Mich. (Dec. 29, 1937)†	.80
Muskegon, Mich.	1.00
Eastern Kentucky:	
Big Sandy River	1.42
Kentucky River	1.50
Western Kentucky	1.40

*Posted by Pure Oil Co.
†McClanahan P. L. and Simrall.
Midland, Mich., price posted by Simrall Corp. and Pure Oil Co. includes Greendale, Porter, Beaverton, Crystal and equal grades. West Branch and Arenac by Simrall Corp. Eastern Kentucky crude purchased by Ashland Refining Co., Ashland, Ky. Buckeye posted by Simrall Corp. and Pure Oil Co.

West Texas

See gravity table.

Pecos County*	$ .91
Pecos shallow†	.81

*Shell Petroleum Corp., Gulf Pipe Line Co. and Humble Oil & Refining Co. †Shell Petroleum Corp.

Southwest Texas

(Effective January 28, 1937)

Pettus	$1.37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09
Lytton Springs	1.12
Luling	1.00

Saxet and Taft take same gravity table as Gulf Coast.

Eastern States

TIDE WATER ASSOCIATED OIL CO.
(Effective March 7, 1938)

Bradford, Pa.	$2.05
Allegany, N. Y.	2.05

SOUTH PENN OIL CO.
(Effective March 7, 1938)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	2.05
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	1.71
Pennsylvania Grade Oil in Eureka Pipe Line lines	1.65
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.55
Corning Grade Oil in Buckeye Pipe Line Co.'s lines	1.27

PENNZOIL CO.
(Effective March 7, 1938)

Pennsylvania Grade Oil in National Transit Lines:	
Group A	1.98
Includes, Cochran, Franklin, Hamilton and Doolittle districts.	
Group B	1.97
Includes Tidioute district.	
Group C	1.96
Includes Turkey and Tidioute districts.	
Group D	1.96
Includes Bear Creek and Porkey districts.	
Group E	1.93
Includes Eldeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts.	

PURE OIL CO.
(Effective March 7, 1938)

Cabin Creek, W. Va.	$1.65
Bradford Hollow, W. Va.	1.65
Kelly Creek, W. Va.	1.66

Canada

Ontario (Sept. 9, 1933)*

Petrolia	$2.10
Oil Springs	2.17

TURNER VALLEY NAPHTHAS AND CRUDE OIL
(January 5, 1938, by Imperial Oil, Ltd.)

Clear naphtha and discolored naphtha, 65 gravity and higher	$2.14
Discolored naphtha and crude oil, 40-40.9 gravity	1.14
Increasing 2 cents for each degree gravity with top price for 64-64.9 gravity	1.62

These prices f.o.b. producers field tankage.

*Imperial Oil, Ltd.

Mexico

Heavy Mexican crude	*$.85

*In U. S. currency, f.o.b. ship, based on February spot market transactions.

Crude Oil Price Changes

Effective May 20, Richfield Oil Co. will reduce prices of Santa Maria, California, crude 25 cents per barrel, making 13-13.9 gravity 40 cents; 14-14.9, 42 cents; 15-15.9, 44 cents; 16-16.9, 45 cents; 17-17.9, 46 cents; 18-18.9, 47 cents; 19-19.9, 48 cents.

Rocky Mountain Runs

Production estimates for week ended May 13, 1938:

	Bbls.
WYOMING	
Salt Creek	15,860
Big Muddy	1,280
Badger Basin	150
Black Mountain	150
Dallas Derby	580
Dutton Creek	40
Elk Basin	30
Frannie	1,200
Garland	2,040
Grass Creek	150
Hamilton dome	2,260
Hidden dome	140
Hudson	300
Labarge	950
Lance Creek	10,030
Lost Soldier	1,440
Medicine Bow	3,180
Mule Creek	140
Midway	40
Oregon Basin	1,850
Osage	910
Pilot Butte	20
Quealy dome	690
Rock River	2,240
South Casper	490
Poison Spider	280
Teapot	20
Warm Springs	70
Wertz	700
Total Wyoming	47,230
MONTANA	
Cat Creek	500
Cut Bank	7,410
Dry Creek	1,560
Kevin Sunburst	3,200
Pondera	400
Total Montana	13,070
COLORADO	
Florence	180
Four Collins and Wellington	250
Iles dome	2,510
Moffat	380
Orchard	40
Rangely	90
Tow Creek	180
Price	10
Total Colorado	3,640
NEW MEXICO	
Cooper	5,020
Eaves	930
Eunice	25,870
Hardy	1,820
Hobbs	15,220
Jal	1,230
Langlie	3,560
Lynch	600
Lynn	860
Mattix	2,820
Monument	26,950
North Lynch	50
Penrose	5,010
Rhoades	90
Skelly	1,790
South Eunice	2,840
Vacuum	1,480
Artesia-Maljamar	6,520
Getty	200
Hogback	200
Rattlesnake	820
Table Mesa	80
Total New Mexico	103,960
Total Rocky Mountain region	167,900

Crude Prices by Gravities

	Oklahoma-Kansas	Oklahoma-Kansas	North and Central Texas	East Central Texas (Mexia district)	North Louisiana-Arkansas	Gray County, Texas	Hutchinson-Carson counties, Texas	Rodessa, Louisiana-Texas and Panola County, Texas	Conroe, Tomball, Raccoon Bend, (Deep) Satsuma	Gulf Coast	Gulf Coast	Lea County, N. Mex. West Texas except Pecos County	Mirando district, Texas	Marion County, Texas	Refugio, Greta, Saxet, Taft, Texas	Anahuac, Flour Bluff, Dickson, Turtle Bay	White Castle, Louisiana	Iowa, Louisiana	Cayuga, Texas
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Bel. 18	....	....	....	....	....	....	....	....	....	$ .95	....	....	....	....	....	....	....	$ .90	....
18-18.9	....	....	....	....	....	....	....	....	....	.95	....	....	....	....	....	....	....	.92	....
19-19.9	....	....	....	....	....	....	....	....	....	.95	....	....	....	....	....	....	$ .94	.94	....
20-20.9	....	....	....	....	....	....	....	....	....	.95	$ .95	....	$ .96	....	$1.01	....	.96	.96	....
21-21.9	....	....	....	....	....	....	....	....	....	.98	.98	....	.98	....	1.03	....	.98	.98	....
22-22.9	....	....	....	....	....	....	....	....	....	1.01	1.01	....	1.00	....	1.05	....	1.01	1.01	....
23-23.9	....	....	....	....	....	....	....	....	....	1.04	1.04	....	1.02	....	1.07	....	1.04	1.04	....
24-24.9	....	....	....	....	....	....	....	....	....	1.07	1.07	....	1.04	....	1.09	....	1.07	1.07	....
Bel. 25	....	$ .98	....	....	$ .90	....	....	$ .93	....	....	....	....	....	$ .90	....	....	....	....	$ .88
25-25.9	....	1.00	....	....	.92	....	....	.95	....	1.10	1.10	$ .78	1.06	.92	1.11	....	1.10	1.10	.90
26-26.9	....	1.02	....	....	.94	....	....	.97	....	1.13	1.13	.80	1.08	.94	1.13	....	1.13	1.13	.92
27-27.9	....	1.04	....	....	.96	....	....	.99	....	1.15	1.15	.82	1.10	.96	1.15	....	1.15	1.15	.94
28-28.9	....	1.06	....	....	.98	....	....	1.01	....	1.17	1.17	.84	1.12	.98	1.17	....	1.17	1.17	.96
Bel. 29	$1.06	....	$ .96	$1.03	....	....	....	....	$1.20	....	....	....	....	....	....	....	....	....	....
29-29.9	1.08	1.08	.98	1.05	1.00	....	....	1.03	1.22	1.19	1.19	.86	1.14	1.00	1.19	....	1.19	1.19	.98
30-30.9	1.10	1.10	1.00	1.07	1.02	....	....	1.05	1.24	1.21	1.21	.88	1.16	1.02	1.21	$1.16	1.21	1.21	1.00
31-31.9	1.12	1.12	1.02	1.09	1.04	....	....	1.07	1.26	1.23	1.23	.90	1.18	1.04	1.23	1.18	1.23	1.23	1.02
32-32.9	1.14	1.14	1.04	1.11	1.06	....	....	1.09	1.28	1.25	1.25	.92	1.20	1.06	1.25	1.20	1.25	1.25	1.04
33-33.9	1.16	1.16	1.06	1.13	1.08	....	....	1.11	1.30	1.27	1.27	.94	1.22	1.08	1.27	1.22	1.27	1.27	1.06
34-34.9	1.18	1.18	1.08	1.15	1.10	....	....	1.13	1.32	1.29	1.29	.96	1.24	1.10	1.29	1.24	1.29	1.29	1.08
Bel. 35	....	....	....	....	....	$ .96	$ .91	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1.20	1.20	1.10	1.17	1.12	.98	.93	1.15	1.34	....	1.31	.98	1.26	1.12	1.31	1.26	1.29	1.29	....
36-36.9	1.22	1.22	1.12	1.19	1.14	1.00	.95	1.17	1.36	....	1.33	1.00	1.28	1.14	1.33	1.28	1.29	1.29	....
37-37.9	1.24	1.24	1.14	1.21	1.16	1.02	.97	1.19	1.38	....	1.35	1.02	1.30	1.16	1.35	1.30	1.29	1.29	....
38-38.9	1.26	1.26	1.16	1.23	1.18	1.04	.99	1.21	1.40	....	1.37	1.04	1.32	1.18	1.37	1.32	1.29	1.29	....
39-39.9	1.28	1.28	1.18	1.25	1.20	1.06	1.01	1.23	1.42	....	1.39	1.06	1.34	1.20	1.39	1.34	1.29	1.29	....
40,over	1.30	1.30	1.20	1.27	1.22	1.08	1.03	1.25	1.44	....	1.41	1.08	1.36	1.22	1.41	1.36	1.29	1.29	....

Column 1—Companies posting are Barnsdall, Bell, Champlin, Continental, Cushing, Derby, Bay, Eason, El Dorado, Cities Service, Falcon, Globe, Gulf, Johnson, National, Phillips, White Eagle, Stanolind, Sunray, Texas, Sun, Vickers and Wilcox.
Column 2—Anderson & Prichard, Carter, Cosco, Deep Rock, Magnolia, Mid-Continent, Pure, Rock Island, Shell, Sinclair, Skelly and Tide Water.
Column 3—All purchasers.
Column 4—Humble Oil & Refining Co. and Sinclair Oil Purchasing Co.
Columns 5, 6, 7 and 8—All purchasers.
Column 9—Humble Oil & Refining Co. and Sun Oil Co. Tide Water Oil Co.'s schedule starts at 35 degrees, $1.34 with 2-cent spread up to 40 and over at $1.44. (Raccoon Bend prices are for deep sand oil.)
Column 10—The Texas Co. (Gulf Refining Co. pays same prices up to and including 34 gravity, but continues its 2-cent spread up to 40 and over at $1.41.)
Column 11—Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Sun Oil Co.
Column 12—All purchasers.
Column 13—All purchasers (effective July 6, 1937).
Column 14—Magnolia Petroleum Co.
Column 15—Humble Oil & Refining Co. (effective July 6, 1937).
Column 16—Humble Oil & Refining Co.
Columns 17 and 18—Shell Petroleum Corp.
Column 19—Tide Water Oil Co.

New or Improved Equipment

Oil-Field Products in Hole Can Be Drilled Up if Necessary

The Security Engineering Co., Inc., Whittier, Calif., has perfected a new line of oil-field products for use underground which can be drilled up when occasion demands and are called Security drillable products. They are made of "Securaloy," a tough, strong metal alloy which machines, perforates and threads the same as steel. This new material drills up smoothly and quickly. Having a specific gravity only slightly greater than that of shale, it readily circulates out of the hole with the drilling fluid.

Security drillable products, the manufacturers say, open up new procedures, new safeties, and new efficiencies in oil-field production and testing methods. When set in producing zones they are designed to provide for future reconditioning or deeper development of wells, and to eliminate the hazards created by pieces of equipment which may become lost, wedged or frozen in the hole. In addition to conventional liner installations, these drillable products are said to permit new and more efficient production methods and to aid in the solution of oil-field problems by making possible procedures which heretofore have been impractical.

Besides drillable production liners, cementing equipment and production testers, a complete line of Security drillable accessories is available, including adapters, bullplugs, collars, liner-hangers, packers (all types), pipe, pipe-fittings, pipe-nipples, reducers, etc.

Although "Securaloy" can be drilled up with conventional types of piloted drilling-bits, Security Engineering Co., Inc., is manufacturing also a line of special drilling-bits engineered to drill up this new material with maximum speed and efficiency.

Carrel Now Manager of Sales

Union Wire Rope Corp., of Kansas City, Mo., and Tulsa, has appointed M. D. Carrel manager of sales for its central territory, with headquarters at 431 Pershing Drive, Chicago. Mr. Carrell has had wide experience in government and sales positions. Among his government posts, beginning in 1899, were those of secretary to General Wood, military governor of Cuba; secretary Dominican customs receivership established by President Theodore Roosevelt; deputy surveyor, Manila, Philippine Islands, engaged in special study of Philippine trade requirements; secretary of Puerto Rico by presidential appointment, and on several occasions acting governor; assistant vice president of American International Corp., reporting on business in Latin America; drafting officer for State Department, Washington; vice president Ulen & Co. and Ulen Engineering Corp., in charge of development of business in Latin America; director and economic advisor of Foreign Bond Associates, Inc.; regional manager of the Housing Division, P.W.A.

Marmon-Herringtons for Belgium

Marmon-Herrington Co., Inc., Indianapolis, Ind., has shipped 150 all-wheel-drive commercial pickup trucks to Belgium. The units are Marmon-Herrington Ford V-8 trucks completely re-engineered for equally efficient delivery of power to all wheels. They are expected to solve transportation problems presented by Belgian territory where off-the-highway work is an everyday requirement. The trucks were shipped "knocked down" to facilitate loading, and an engineer from the company was sent to supervise assembly in Belgium. They will be put into service through mud, snow, ice, sleet, sand, and rough terrain.

Emsco Announces Appointments

Emsco Derrick & Equipment Co. has appointed G. W. Walton vice president in charge of the Mid-Continent machinery division, and S. W. Webster manager of Mid-Continent machinery division sales and service. Both men are well known throughout the oil country, having had long experience in the development of sales of oil-field equipment. They have been associated with Emsco for many year. Mr. Walton will be stationed in Dallas, Tex. Mr. Webster will retain his present location in Houston, Tex., where Emsco is rapidly expanding its manufacturing facilities.

G. W. Walton *S. W. Webster*

Stupakoff Bottom-Hole Gauges

Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has been appointed sole distributor for the Stupakoff bottom-hole pressure gauge and bottom-hole sampler. The Stupakoff Laboratories, Pittsburgh, have been manufacturing and marketing these devices for several years, and they are said to have met with favor by production engineers and geologists. Col. W. F. Rockwell, president of Pittsburgh Equitable Meter Co., said: "A study of these devices has indicated that their design is sound and that they provide accuracy in making bottom-hole determinations."

Dunigan Store in Wichita Falls

Dunigan Tool & Supply Co., of Breckenridge, Tex., has opened a store in Wichita Falls, Tex., with Tom Bliss in charge.

Calyx Core-Drills in 17 Models Offered by Ingersoll-Rand

Seventeen models of Calyx core-drills are offered by Ingersoll-Rand Co., Phillipsburg, N. J. These drills are designed for all classes of service, including laboratory testing, highway testing, mine ventilation-shaft drilling, foundation testing, well drilling, elevator-plunger-hole drilling, mineral exploration, oil structure exploration, waterfront construction, and wire-saw equipment-shaft drilling in quarries. This type of drill is designed for boring hole in rock and concrete in sizes from 2¼ to 72 inches in diameter, and depths of 2,500 feet.

Hazards of Blasting Decreased

Atlas Manasite blasting-caps and electric blasting-caps are announced by Atlas Powder Co., Wilmington, Del., as representing an advance in safety for users of explosives. The company points out that no detonator should be called "safe," as it is intended to set off explosives. The new Manasite detonators, however, are designed to increase the margin of safety. They contain an initiating compound known chemically as hexanitromannite. As used in the Manasite detonators, this compound is much less sensitive to impact and friction. Full detonating power and other advantages are maintained.

Carnegie-Illinois Promotions

Carnegie-Illinois Steel Corp., Pittsburgh, Pa., has made William P. Andrews manager of sales in the Cincinnati, Ohio, district. Mr. Andrews, former assistant manager of sales in the Chicago district, takes the place made vacant by the death of Lawrence K. Slaback. T. Lane Watson, who succeeds Mr. Andrews in Chicago, has been in the service of United States Steel Corp. subsidiaries since he joined the former Carnegie Steel Co. in 1910.

Widdoes Named General Manager

W. Roy Widdoes has been appointed general manager of By-Products Steel Corp., Coatesville, Pa. Born in Coatesville in 1895, Mr. Widdoes attended the high school in that city and then joined Lukens Steel Co., Coatesville, in 1912 as a clerk in the time department. In 1915 he became associated with the Reading Railroad, but returned to the Lukens' organization later in the same year, serving in the purchasing department. In 1929 he was appointed assistant purchasing agent for Lukens. In 1937 Mr. Widdoes joined By-Products Steel Corp. as assistant to R. W. Moffett, president, and he served in that capacity until his recent appointment as general manager.

Retail Oil Markets

Tank-wagon and filling station prices on gasoline and kerosene furnished by the largest marketing firms

Prices as of May 17, 1938

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and city taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dir.	Inc. tax	Kero. tank wag.
Chicago, Ill.	15.6	13.6	4.0	10.5
Decatur	15.6	14.1	4.0	10.5
Joliet	15.6	14.1	4.0	10.5
Peoria	15.6	14.1	4.0	10.5
Quincy	15.4	13.9	4.0	10.3
Davenport, Ia.	15.6	14.1	4.0	‡10.5
Des Moines	15.4	13.9	4.0	‡8.3
Mason City	15.8	14.3	4.0	‡10.7
Sioux City	15.6	14.1	4.0	‡10.5
Duluth, Minn.	17.4	15.9	5.0	11.3
Mankato	17.0	15.5	5.0	10.9
Minneapolis	17.0	15.5	5.0	10.9
LaCrosse, Wis.	17.0	15.5	5.0	10.9
Green Bay	17.4	15.9	5.0	10.3
Milwaukee	16.8	15.3	5.0	10.7
Detroit, Mich.	15.3	13.8	4.0	10.0
Grand Rapids	14.8	13.8	4.0	9.7
Saginaw	16.3	14.8	4.0	9.3
Evansville, Ind.	17.1	15.6	5.0	†11.0
Indianapolis	17.3	15.8	5.0	†11.2
South Bend	17.6	16.1	5.0	†9.4
Fargo, N. Dak.	17.2	15.7	4.0	12.1
Minot	18.5	17.0	4.0	13.4
Huron, S. Dak.	17.5	16.0	5.0	11.4
Kans. City, Mo.*	14.9	13.4	4.0	9.8
St. Louis*	15.2	13.7	4.0	8.0
St. Joseph*	14.9	13.4	4.0	9.8
Wichita, Kans.	14.4	12.0	4.0	8.3

*State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective Dec. 7, 1936, f.o.b. Chicago tank-wagon prices: Range oil, 1-99 gallons, 8.5 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.3 cents. Stanolex No. 1, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7 cents. Stanolex furnace oil, 1-149 gallons, 7.8 cents; 150 gallons and over 7 cents; Stanolex A, 1-399 gallons, 5.75 cents; 400 gallons and over, 4.75 cents. Stanolex B, 1-799 gallons, 5.75 cents; 800 gallons and over, 4.75 cents.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Tank-wag. dlr.	Gasoline Tank-car con'r.	Inc. tax	Kero. tank wag.
Atl'tic. City, N. J.	12.75	11.25	4.0	8.0
Newark	12.75	11.25	4.0	8.0
Annapolis, Md.	14.85	13.35	5.0	9.5
Baltimore	14.25	12.75	5.0	9.0
Cumberland	16.65	14.15	5.0	10.0
Wash'g'n, D. C.	12.5	11.0	3.0	9.5
Danville, Va.	16.95	14.45	6.0	12.9
Norfolk	15.75	13.25	6.0	11.5
Petersburg	16.05	13.55	6.0	11.7
Richmond	16.05	13.55	6.0	11.7
Roanoke	17.25	14.75	6.0	12.9
Charles'n, W. V.	17.05	14.55	6.0	12.6
Parkersburg	15.35	13.85	6.0	11.2
Wheeling	16.25	14.85	6.0	12.2
Charlotte, N. C.	18.65	16.15	7.0	12.6
Hickory	19.15	16.65	7.0	13.0
Mt. Airy	18.95	16.45	7.0	12.8
Raleigh	18.25	15.75	7.0	12.1
Salisbury	18.75	16.25	7.0	12.7
Charleston, S. C.	17.25	14.75	7.0	11.1
Columbia	18.25	15.75	7.0	12.1
Spartanburg	18.95	16.45	7.0	12.9

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5 cent per gallon.

Effective May 15, 1937, in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax counties): Commercial consumers taking deliveries of 50 gallons (W. Va., 100 gallons) or more at one time will be billed at posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons (W. Va., 100 gallons) will be billed at 4 cents per gallon over posted consumer tank-wagon price. Generally the posted consumer tank-wagon price will be the equivalent to the dealer price less .5 cent per gallon.

Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey.

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline Tank-wag.	Gasoline Net dlr.	Inc. tax	Kero. tank-wag.
Atlanta, Ga.	21.0	18.0	7.0	*14.0
Augusta	21.0	18.0	7.0	*14.0
Macon	21.0	18.0	7.0	*14.0
Savannah	19.5	16.5	7.0	*12.0
Birm'ham, Ala.	21.0	18.0	8.0	12.0
Mobile	21.0	18.0	9.0	11.0
Montgomery	21.0	19.0	9.0	13.0
Jackson, Miss.	19.5	16.5	7.0	*12.5
Vicksburg	19.5	16.5	7.0	*12.5
Jacks'ville, Fa.	22.5	17.5	8.0	11.0
Miami	20.5	17.5	8.0	11.0
Pensacola	22.0	19.0	9.0	12.0
Tampa	20.5	17.5	8.0	10.5
Lexington, Ky.	19.0	16.0	6.0	11.0
Covington	18.5	15.5	6.0	11.0
Louisville	19.0	16.0	6.0	10.5
Paducah	19.0	16.0	6.0	10.0

Price basis to tank-wagon consumers: Effective January 4, 1937, 3 cents per gallon below tank-wagon price. Kerosene prices in all states subject to 2 cents discount except in Kentucky where prices are net.

*Includes 1-cent state tax. †Subject to 2-cent discount.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax; and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Dealer	Inc. tax	Kero. tank-wag.
Denver, Colo.	14.0	5.0	11.5
Grand Junction	19.0	5.0	15.0
Pueblo	13.0	5.0	10.5
Casper, Wyo.	17.0	5.0	11.5
Cheyenne	16.0	5.0	13.0
Butte, Mont.	19.5	6.0	15.5
Billings	19.5	6.0	13.0
Helena	19.5	6.0	15.5
Great Falls	19.5	6.0	15.5
Salt Lake City, Utah	18.0	5.0	16.0
Twin Falls, Ida.	21.0	6.0	18.0
Boise	21.5	6.0	18.0
Albuquerque, N. M.	17.5	*6.5	12.0

*Includes city tax of one-half cent.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Tank-wag.	Gasoline Di-vided con'r.	Inc. tax	Kero. tank-wag.
Ohio points	16.5	15.5	5.0	*13.0

*Includes state tax of 1 cent.

New York and New England

SOCONY-VACUUM OIL CO., INC

	Gasoline Tank-wag.	Gasoline Tank-car	Inc. tax	Kero. tank wag.
Albany, N. Y.	14.5	12.5	5.0	9.0
*Met. N. Y.:				
M'htt'n, Br'nx	14.0	12.5	5.0	8.75
Staten Island	14.0	12.5	5.0	8.75
Q'ns & Bklyn.	14.0	12.5	5.0	8.75
Buffalo	14.0	13.0	5.0	7.5
Rochester	15.0	13.2	5.0	8.5
Syracuse	14.5	13.1	5.0	9.0
Boston, Mass.	13.5	11.75	4.0	8.5
Portland, Me.	15.0	13.0	5.0	8.75
Manch'ter, N.H.	15.5		5.0	9.0
Burlington, Vt.	15.4	13.4	5.0	9.5

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point; monthly purchases under 5,000 gallons, pay divided dealer tank-wagon prices at delivery point.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank-wag.	Gasoline Serv. sta.	Inc. tax	Kero. tank-wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	10.0
Fresno, Calif.	18.5	19.5	4.0	12.5
Phoenix, Ariz.	21.5	22.5	6.0	*17.5
Reno, Nev.	20.5	21.5	5.0	13.5
Portland, Ore.	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	13.5
Spokane	23.0	24.0	6.0	16.5
Tacoma	20.0	21.0	6.0	13.5

*Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: on tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dir.	Inc. tax	Kero. tank-wag.
Omaha	18.0	16.5	6.0	10.8
McCook	17.5	15.0	6.0	9.5
Norfolk	18.4	16.9	6.0	10.3
North Platte	18.8	16.9	6.0	11.2
Scotts Bluff	19.5	16.5	6.0	12.3

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective Jan. 1, 1935.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Tank-wag. dlr.	Gasoline Tank-car con'r.	Inc. tax	Kero. tank-wag.
N. Orleans, La.	19.0	16.5	*10.0	†12.0
Baton Rouge	17.0	14.5	8.0	12.0
Alexandria	17.5	15.0	8.0	10.5
Lafayette	18.0	15.5	8.0	12.5
Lake Charles	18.0	15.5	8.0	12.5
Shreveport	16.5	14.0	8.0	9.5
Kn'xv'lle, Tenn.	20.0	17.5	8.0	14.0
Memphis	18.0	15.5	8.0	12.0
Chattanooga	19.5	17.0	8.0	13.5
Nashville	19.0	16.5	8.0	10.5
Bristol	19.0	17.75	8.0	14.5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery takes posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Louisiana kerosene prices include 1-cent state tax.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline Tank-wag. dlr.	Gasoline Tank-car con'r.	Inc. tax	Kero. tank-wag.
Philadelphia, Pa.	13.75	12.25	5.0	10.0
Pittsburgh	15.0	13.0	5.0	10.5
Allentown	14.25	12.75	5.0	10.5
Erie	14.5	13.0	5.0	10.0
Scranton	14.5	13.0	5.0	10.5
Altoona	15.0	13.0	5.0	10.5
Dover, Del.	13.5	....	5.0	10.5
Wilmington	13.5	....	5.0	10.5
Springf'd, Mass.	13.5	....	4.0	8.0
Worcester	14.0	....	4.0	8.5
Hartford, Conn.	13.0	....	4.0	7.5
New Haven	13.5	....	4.0	8.0
Providence, R. I.	13.0	....	4.0	8.0

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract, less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Dealer	Inc. tax	Kero. tank-wag.
Muskogee, Okla.	14.5	5.0	7.0
Oklahoma City	13.5	5.0	8.0
Tulsa	14.0	5.0	6.0
Ft. Smith, Ark.	14.25	5.0	8.0
Little Rock	16.75	7.5	9.5
Texarkana	14.0	5.0	8.5

Texas

	Gasoline Tank-wag.	Gasoline Serv. sta.	Inc. tax	Kero. tank-wag.
Dallas, Tex.	14.0	18.0	5.0	8.0
Fort Worth	14.0	18.0	5.0	8.0
Houston	14.5	19.0	5.0	8.0
San Antonio	13.5	17.5	5.0	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gallon lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank-wag.	Inc. tax	Kero. tank-wag.
Halifax, N. S.	24.5	10.0	18.5
St. John, N. B.	24.5	10.0	18.5
Montreal, Que.	21.0	6.0	17.5
Toronto, Ont.	22.0	6.0	17.0
Hamilton, Ont.	22.0	6.0	17.0
Winnipeg, Man.	27.5	7.0	20.7
Brandon, Man.	28.1	7.0	22.3
Regina, Sask.	27.0	7.0	22.0
Saskatoon, Sask.	29.8	7.0	24.9
Edmonton, Alta.	26.5	7.0	21.5
Calgary, Alta.	24.0	7.0	19.0
Vancouver, B. C.	23.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon price. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Retail Price Changes

Standard Oil Co. of Kentucky May 1 reduced tank-wagon kerosene .5 cent at Jackson and Vicksburg; April 14 advanced tank-wagon and dealer gasoline .5 cent, and May 3 reduced tank-wagon kerosene 1.5 cents at Miami.

Atlantic Refining Co. April 19 reduced dealer gasoline .5 cent at Dover; May 13 reduced dealer gasoline .5 cent at Wilmington; April 28 reduced dealer gasoline .5 cent in Springfield; April 8 reduced dealer gasoline .5 cent in Worcester; April 22 reduced tank-wagon kerosene .5 cent in Worcester and Hartford; May 5 reduced dealer gasoline .3 cent at Providence; May 13 reduced tank-wagon kerosene .5 cent at Providence.

New York Market

(Continued from Page 169)

business reported in the spot Gulf Coast market for the past two weeks. Some observers, however, anticipate that traders may enter the market to cover summer sales in the near future in view of the cut in production allowables and the failure of the Kanotex price cut to receive prompt support. There is evidence that some traders have held out of the export market thinking that an adjustment in crude prices would develop and that it might react in their favor in refined products. Only a few feelers were reported for gas oil export cargoes.

Prices of Refined Products

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of May 17, 1938

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 oct. and below	.04⅛	.04¼
63-66 octane	.04½	.04⅝
67-69 octane	.04¾	.04⅞
70-72 octane (regular)	.05⅛	.05¼
60-62 400 grades:		
62 oct. and below	.04⅛	.04¼
63-66 octane	.04½	.04⅝
67-69 octane	.04¾	.04⅞
70-72 octane (regular)	.05⅛	.05¼
64-66 375	.04¾	.04⅞
68-70 360	.05	.05⅛

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.04⅛	.04¼
63-66 octane	.04½	.04⅝
67-69 octane	.04¾	.04⅞
70-72 octane (regular)	.05⅛	.05¼
60-62 400	.04½	.04¼
64-66 375	.04¾	.04⅞

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U. S. Motor grades:		
62 octane and below	.04⅜	.04½
63-66 octane	.04⅞	.05
67-69 octane	.05	.05⅛
70-72 octane (regular)	.05½	.05⅝

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:		
62 octane and below	.04½	.04⅝
67-69 octane	.05	.05⅛
70-72 octane (regular)	.05½	.05⅝

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04¼	.04⅜
63-66 octane	.04½	.04¾
67-69 octane	.04¾	.05
70-72 octane (regular)	.05	.05⅛
60-62 400 grades:		
62 octane and below	.04¼	.04⅜
63-66 octane	.04½	.04¾
67-69 octane	.04¾	.05
70-72 octane (regular)	.05	.05⅜
64-66 375	.04¾	.05
68-70 360	.05	.05¼

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.05⅛	.05⅜
65 octane	.06½	.06¾
68-70 octane	.07	.07¼

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.06¾	.08¼
58-60 400, 65 oct. and higher	.08½	.09¼

EAST COAST (domestic)—

U. S. Motor, 60-64.9 octane:		
New York (Bayonne)	.06¼	.06½
Philadelphia	.06¼	.06½
Boston	.06½	.06¾
Baltimore	.06½	.06¾
Charleston, S. C.	.07	.07¼
U. S. Motor, 65 and above:		
*New York (Bayonne)	.06½	.07
Philadelphia	.06½	.07
Boston	.06¾	.07
Baltimore	.07	.07¼
Charleston, S. C.	.07¼	.07½

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane	.05	.05¼
60-64.9	.05¼	.05⅜
65 octane and higher	.05½	.05¾

Naphtha

PENNSYLVANIA (inland refineries)—

52-56 450 (blending)	.04¾	.05

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02
Grade 18-55	.02⅜	.02½

NORTH TEXAS—

Grade 26-70		.02
Grade 18-55	.02⅜	.02½

CALIFORNIA—

75-85 375-390	.06½	.07

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70	.02⅜

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p., 110 flash, 540-550 e.p.	.04	.04⅛
41-43 gr., 300-520 l.b.p., 110-125 flash, 500-520 e.p.	.04⅛	.04¼
46-48 gr., 210-230 l.b.p., 480 max., e.p.	.04½	.04⅝

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.04⅛	.04¼
42-44	.04¼	.04⅜

NORTH TEXAS—

41-43	.04⅛	.04¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43	.04⅜	.04½

ARKANSAS (Ark., N. La., Miss. del.)—

41-43	.04⅜	.04⅝

PENNSYLVANIA (inland refineries)—

45		.04⅞
46		.05
47		.05⅛

CHICAGO (Based on Group 3)—

41-43	.04⅛	.04⅜
42-44	.04⅜	.04⅝

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.05	.06

NEW YORK (Bayonne, N. J.)—

41-43		.05¾

***GULF COAST (domestic)—**

41-43		.04¼

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03⅞	.04
No. 1 prime white, 38-42	.03¾	.03⅞
No. 1 straw, 38-40	.03⅝	.03¾
No. 2 straw, 32-36	.03	.03⅛
No. 2 dark, 32-36	.02⅞	.03⅛
No. 3 zero to 15, 28-32	.02¾	.03
No. 3, 15 and above, 28-32	.02⅝	.02⅞

NORTH TEXAS—

No. 1 prime white, 38-42	.03¾	.03⅞
No. 1 straw, 38-40	.03⅝	.03¾

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36		.03⅝

CHICAGO (Based on Group 3)—

Range oil	.03⅞	.04⅛
No. 1 prime white, 38-40	.03¾	.04
No. 1 straw, 38-40	.03⅝	.03⅞
No. 2 straw, 32-36	.03⅜	.03⅝
No. 2 dark, 32-36	.03¼	.03⅜
No. 3, zero to 15, 28-32	.03¼	.03⅜
No. 3, 15 and above, 28-32	.02⅞	.03

NEW YORK (Bayonne, N. J.)—

*No. 1		.05¾
*No. 2		.04¾
*No. 4		.04¾

*Barge deliveries one-eighth to one-fourth cent under above tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal.; fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.02⅝	.02¾
No. 4, low cold test, 24-28	1.05	1.10
No. 4, 15 and above, 24-28	.85	.90
No. 5, low cold test, 18-22	.70	.75
Below 18 fuel oil, industrial	.55	.60

NORTH TEXAS—

U.G.I. gas oil	.02⅝	.02¾
No. 4, low cold test, 24-28	1.05	1.10
No. 5, low cold test, 18-22	.70	.75
Below 18 fuel oil, industrial	.55	.60

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02⅝	.02⅞
No. 4, low cold test, 24-28	1.05	1.10
No. 4, 15 and above, 24-28	.85	.95
No. 5, low cold test, 18-22	.70	.77½
No. 5, 15 and above, 18-22	.80	.70
No. 6, low cold test, 10-16	.60	.70
No. 6, 15 and above, 10-16	.35	.45

PENNSYLVANIA (inland refineries)—

36-40	.03⅝	.03⅞

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.25	1.50
24 plus diesel, per bbl.	1.20	1.50
24 plus diesel (bunkers)	1.30	1.55
12-16 (bunkers at tidewater)	.90	1.00
10-16 (cargo lots)	.80	.90
12-17 (tankcars)	.60	.90
10-17 (high sulfur)	.55	.85
San Joaquin Valley:		
10-18 (tankcars)	.60	.85
24 plus diesel, per bbl.	1.30	1.50
San Francisco:		
24 plus diesel, per bbl.	1.45	1.55
24 plus diesel (bunkers)	1.55	1.65
10-16 (bunkers)		.95

GULF COAST—

28-30 gas oil	.03¼	.03½
28-30 diesel (bunkers)		1.75
Bunkers (bulk cargoes)	.72	.75
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.04¾
28-30 diesel (lighterage 6¼c per bbl.)		1.85
28-30 diesel (tankcars)	.04¾	.05
Bunker C (to ocean-going ships in N. Y. harbor)		1.05
Industrial fuel (tankcars)	.04	.04¼

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

190-200 D, 15-25		.19
150-160 D, 0-10	.14½	.16
150-160 D, 15-25	.13½	.15½
150-160 E, 15-25	.13	.15
100-110 D, 0-10		.14½
Steam refined:		
631 green (treated)		.13½
600 dark green (untreated)		.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour test	.16	.16½
15 pour test	.15	.15½
20 pour test	.14	.14½
25 pour test	.13	.13½
Steam refined:		
600	.08½	.09
650	.10½	.11½
600 Pennsylvania flash	.11	.13
630 flash	.14	.15
600 Warren E filtered	.13	.14

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:		
150-3		.09
180-3		.10
180-4		.09½
200-3		.10½
200-4		.10
250-3		.11½
250-4		.11
280-3		.12½
280-4		.12
300-3½		.13
400-3½		.14
100-2½ paraffin oil		.06
15-20 Cold Test:		
200-3		.10
200-4		.09½
250-3		.11
250-4		.10½
280-3		.12
280-4		.11½

GULF COAST—

Pale Oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08⅛	.08⅜
750-3½	.08⅝	.09⅛
1,200-3½	.09⅛	.09⅜
1,500-4	.09⅜	.10
Red Oils:		
200-5-6	.07¼	.07½
300-5-6	.07¾	.07½
500-5-6	.08	.08½
750	.08⅜	.09
1,200-5-6	.09⅛	.09½

CALIFORNIA (moving to dom. market)—

Pale Oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red Oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F. color, 400-405 flash:		
Zero pour test	.15	.15½
10 pour test	.14	.14½
15 pour test	.13½	.14
25 pour test	.12½	.13
180 vis. at 70° F., 3 color:		
25 pour test	.14	.14½
200 vis. at 70° F., 3 color:		
Zero pour test	.16½	.17
10 pour test	.15½	.16
15 pour test	.15	.15½
25 pour test	.14	.14½

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale	.02⅛	.02¼

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0190	.0200
124-126 (a.m.p.) w.c. scale	.0190	.0200

NEW YORK—

Wax in bags fully refined:		
122-125 (a.m.p.) wax		.0420
125-127 (a.m.p.) wax		.0435
128-130 (a.m.p.) wax		.0445
130-132 (a.m.p.) wax		.0455
133-135 (a.m.p.) wax		.0500
135-137 (a.m.p.) wax		.0515
124-126 (a.m.p.) w.s.		.0185
124-126 (a.m.p.) y.s.		.0185
Petrolatum in barrels, carload lots:		
Dark green	.02	.02⅛
Amber	.02⅜	.02½
Extra amber	.02⅝	.02¾
Lily white	.05½	.05¼
Snow white	.06½	.06½
Cream	.04¾	.04¼

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.04⅞	.05
60-62 400	.04⅞	.05
61-63 390	.05	.05⅛
64-66 375	.05	.05⅛

LOS ANGELES—

U. S. Motor grades:		
55-65 octane	.05¼	.05½
65-69 octane		.05¾
Above 69 octane		.06¼

KEROSENE

GULF COAST—

41-43 prime white	.04⅜	.04⅝
41-43 water white	.04½	.04¾
44 water white		.04¾

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbls.)—

Cylinder Stocks:		
600 Warren E	.14½	.15
600 S.R. unfiltered	.15½	.16
630 S.R. unfiltered	.17½	.18
600 flash S.R.	.17½	.18
630 flash, S.R.	.21	.21½
Bright Stocks:		
8 color	.21½	.22
6½ plus color in dilution		.21

NEUTRAL OIL

200-3 color	.23½	.24
150-3 color	.21½	.22

PARAFFIN WAX

NEW YORK (prices per pound)—

123-126 a.m.p.		.0375
125-127 a.m.p.		.0387
128-130 a.m.p.		.0412
133-135 a.m.p.		.0437
135-137 a.m.p.		.0455
Crude Scale:		
124-126 w.s.	.0185	.0200
124-126 y.s.	.0185	.0200

Crude Oil Prices

Oklahoma, Kansas, North Central and East Central Texas

(Effective January 28, 1937)

East Texas (May 22, 1937)*	$1.35
Van, Tex.†	1.10
Camp Hill, Tex.	1.27
Cass County, Tex.‡	1.25
Talco	.73
Altus and Tipton, Okla.§	1.20
Other fields (see gravity table).	

*All companies. †Humble Oil & Refining Co.; Pure Oil Co. ‡Texas Co. §Gulf Oil Co. Talco by Humble Oil & Refining Co.

North Louisiana and Arkansas

Smackover, all grades	$ .90
Tullos and Urania	1.02
El Dorado East field	.90
Union County, Ark.	.90
Ouachita County, Ark.	.90
Lisbon, La. (Dec. 13, 1937)*	.98

*Caddo Crude Oil Purchasing Co.

Gulf Coast

(Effective January 28, 1937)

Choctaw and Darrow, La. See note below	
Clay Creek, Tex.	$1.00
Garden Island, La.	1.37
Cleveland, Tex.	1.27
Hardin, Tex.	1.15
Lafitte, La.	1.24
Livingston, Tex.	1.27
Welsh, La.	.98
Tepetate (La.) (Jan. 28, 1937)	1.24

Duval, Jim Hogg, Webb and Zapata counties, Texas, and Heyser and Placedo fields take Mirando gravity prices. Jennings, La., 5 cents lower than Gulf Coast prices on each degree. Segno, Texas, takes Gulf Refining Co.'s Gulf Coast prices. Choctaw and Darrow, Louisiana, posted for first time by Standard Oil Co. of Louisiana, start below 21 degrees at 90 cents, with 3-cent differential up to 25 gravity, then 2-cent differential up to 40 and above, $1.36. Effective October 1, 1937, Stanolind Oil & Gas Co. in Evangeline, La., pays 92 cents for below 20 gravity, adding 2 cents for each degree upward to 40 and over, at $1.34.

Rocky Mountain States

(Effective January 28, 1937)

Iles, Colo., light*	$1.18
Iles, Colo., heavy*	1.12
Greybull, Wyo.*	1.30
Torchlight, Wyo.*	1.30
Grass Creek, Wyo., light*†	1.30
Grass Creek, Wyo., heavy (May 1, 1938)*	.50
Hamilton Dome, Wyo. (May 1, 1938)*	.45
Elk Basin, Wyo., light*†	1.30
Frannie, Wyo., heavy*	.62
Frannie, Wyo., light (May 1, 1938)*	.65
Hogback, N. M. (Jan. 28, 1937)*	1.33
Salt Creek, Dutton Creek and Midway, Wyo., take Stanolind's Oklahoma prices on a gravity basis.	
Big Muddy, Wyo.†‡	1.23
Rock Creek, Wyo.†	1.20½
Lea County, N. M. (see West Texas gravity table).	
Artesia, N. M. (Jan. 2, 1937)‡	.90
Maljamar, N. M. (Jan. 28,1937)‡	.90
Canon City and Florence, Colo.	1.10
Lance Creek, Wyo.*	.97
Lander, Wyo. (Jan. 1, 1938)§	.51¼
Sunburst, Mont. (Nov. 16, 1937)†	.90
Cat Creek, Mont. (Jan. 1, 1938)‡	$1.30
Garland, Wyo. (Jan. 1, 1937)†	.50

*Stanolind Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co. Texas Co. (April 1, 1938). §Hudson Oil Co.

Middle Western States

OHIO OIL CO.
(Effective January 28, 1937)

Lima	$1.00
Illinois	1.35
Princeton, Ind.	1.35
Midland, Mich. (Jan. 5, 1938)*	1.12
West Branch, Mich. (Dec. 29, 1937)†	.80
Buckeye (Jan. 8, 1938)	1.09½
Arenac, Mich. (Dec. 29, 1937)†	.80
Muskegon, Mich.	1.00
Eastern Kentucky:	
Big Sandy River	1.42
Kentucky River	1.50
Western Kentucky	1.40

*Posted by Pure Oil Co.
†McClanahan P. L. and Simrall.
Midland, Mich., price posted by Simrall Corp. and Pure Oil Co. includes Greendale, Porter, Beaverton, Crystal and equal grades. West Branch and Arenac by Simrall Corp. Eastern Kentucky crude purchased by Ashland Refining Co., Ashland, Ky. Buckeye posted by Simrall Corp. and Pure Oil Co.

West Texas

See gravity table.

Pecos County*	$ .91
Pecos shallow†	.81

*Shell Petroleum Corp., Gulf Pipe Line Co. and Humble Oil & Refining Co. †Shell Petroleum Corp.

Southwest Texas

(Effective January 28, 1937)

Pettus	$1.37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09
Lytton Springs	1.12
Luling	1.00

Saxet and Taft take same gravity table as Gulf Coast.

Eastern States

TIDE WATER ASSOCIATED OIL CO.
(Effective March 7, 1938)

Bradford, Pa.	$2.05
Allegany, N. Y.	2.05

SOUTH PENN OIL CO.
(Effective March 7, 1938)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	2.05
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	1.71
Pennsylvania Grade Oil in Eureka Pipe Line lines	1.65
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.55
Corning Grade Oil in Buckeye Pipe Line Co.'s lines	1.27

PENNZOIL CO.
(Effective March 7, 1938)

Pennsylvania Grade Oil in National Transit Lines:	
Group A	1.98
Includes, Cochran, Franklin, Hamilton and Doolittle districts.	
Group B	1.97
Includes Tidioute district.	
Group C	1.96
Includes Turkey and Tidioute districts.	
Group D	1.95
Includes Bear Creek and Porkey districts.	
Group E	1.93
Includes Eldeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts.	

PURE OIL CO.
(Effective March 7, 1938)

Cabin Creek, W. Va.	$1.65
Bradford Hollow, W. Va.	1.65
Kelly Creek, W. Va.	1.65

Canada

Ontario (Sept. 9, 1933)*

Petrolia	$2.10
Oil Springs	2.17
TURNER VALLEY NAPHTHAS AND CRUDE OIL	
(January 5, 1938, by Imperial Oil, Ltd.)	
Clear naphtha and discolored naphtha, 65 gravity and higher	$2.14
Discolored naphtha and crude oil, 40-40.9 gravity	1.14
Increasing 2 cents for each degree gravity with top price for 64-64.9 gravity	1.62
These prices f.o.b. producers field tankage.	

*Imperial Oil, Ltd.

Mexico

Heavy Mexican crude	*$.85

*In U. S. currency, f.o.b. ship, based on February spot market transactions.

Crude Oil Price Changes

Effective May 20, Richfield Oil Co. will reduce prices of Santa Maria, California, crude 25 cents per barrel, making 13-13.9 gravity 40 cents; 14-14.9, 42 cents; 15-15.9, 44 cents; 16-16.9, 45 cents; 17-17.9, 46 cents; 18-18.9, 47 cents; 19-19.9, 48 cents.

Rocky Mountain Runs

Production estimates for week ended May 13, 1938:

	Bbls.
WYOMING	
Salt Creek	15,860
Big Muddy	1,280
Badger Basin	150
Black Mountain	150
Dallas Derby	580
Dutton Creek	40
Elk Basin	30
Frannie	1,200
Garland	2,040
Grass Creek	150
Hamilton dome	2,260
Hidden dome	140
Hudson	300
Labarge	950
Lance Creek	10,030
Lost Soldier	1,440
Medicine Bow	3,180
Mule Creek	140
Midway	40
Oregon Basin	1,850
Osage	910
Pilot Butte	20
Quealy dome	690
Rock River	2,240
South Casper	490
Poison Spider	280
Teapot	20
Warm Springs	70
Wertz	700
Total Wyoming	47,230
MONTANA	
Cat Creek	500
Cut Bank	7,410
Dry Creek	1,560
Kevin Sunburst	3,200
Pondera	400
Total Montana	13,070
COLORADO	
Florence	180
Fort Collins and Wellington	250
Iles dome	2,510
Moffat	380
Orchard	40
Rangely	90
Tow Creek	180
Price	10
Total Colorado	3,640
NEW MEXICO	
Cooper	5,020
Eaves	930
Eunice	25,870
Hardy	1,820
Hobbs	15,220
Jal	1,230
Langlie	3,560
Lynch	600
Lynn	860
Mattix	2,820
Monument	26,950
North Lynch	50
Penrose	5,010
Rhoades	90
Skelly	1,790
South Eunice	2,840
Vacuum	1,480
Artesia-Maljamar	6,520
Getty	200
Hogback	200
Rattlesnake	820
Table Mesa	80
Total New Mexico	103,960
Total Rocky Mountain region	167,900

Crude Prices by Gravities

	Oklahoma-Kansas	Oklahoma-Kansas	North and Central Texas	East Central Texas (Mexia district)	North Louisiana-Arkansas	Gray County, Texas	Hutchinson-Carson counties, Texas	Rodessa, Louisiana-Texas and Panola County, Texas	Conroe, Tomball, Raccoon Bend, (Deep) Satsuma	Gulf Coast	Gulf Coast	Lea County, N. Mex. West Texas except Pecos County	Mirando district, Texas	Marion County, Texas	Refugio, Greta, Saxet, Taft, Texas	Anahuac, Flour Bluff, Dickson, Turtle Bay	White Castle, Louisiana	Iowa, Louisiana	Cayuga, Texas
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Bel. 18	....	....	....	....	....	....	....	....	....	$ .95	....	....	....	....	....	....	....	$ .90	....
18-18.9	....	....	....	....	....	....	....	....	....	.95	....	....	....	....	....	....	....	.92	....
19-19.9	....	....	....	....	....	....	....	....	....	.95	....	....	....	....	....	....	....	.94	....
20-20.9	....	....	....	....	....	....	....	....	....	.95	$ .95	....	$ .96	....	$1.01	....	....	.96	....
21-21.9	....	....	....	....	....	....	....	....	....	.98	.98	....	.98	....	1.03	....	....	.98	....
22-22.9	....	....	....	....	....	....	....	....	....	1.01	1.01	....	1.00	....	1.05	....	1.01	1.01	....
23-23.9	....	....	....	....	....	....	....	....	....	1.04	1.04	....	1.02	....	1.07	....	1.04	1.04	....
24-24.9	....	....	....	....	....	....	....	....	....	1.07	1.07	....	1.04	....	1.09	....	1.07	1.07	....
Bel. 25	....	$ .98	....	....	$ .90	....	....	$ .93	....	....	....	....	....	$ .90	....	....	....	....	$ .88
25-25.9	....	1.00	....	....	.92	....	....	.95	....	1.10	1.10	$ .78	1.06	.92	1.11	....	1.10	1.10	.90
26-26.9	....	1.02	....	....	.94	....	....	.97	....	1.13	1.13	.80	1.08	.94	1.13	....	1.13	1.13	.92
27-27.9	....	1.04	....	....	.96	....	....	.99	....	1.15	1.15	.82	1.10	.96	1.15	....	1.15	1.15	.94
28-28.9	....	1.06	....	....	.98	....	....	1.01	....	1.17	1.17	.84	1.12	.98	1.17	....	1.17	1.17	.96
Bel.29	$1.06	....	$ .96	$1.03	....	....	....	....	$1.20	....	....	....	....	....	....	....	....	....	....
29-29.9	1.08	1.08	.98	1.05	1.00	....	....	1.03	1.22	1.19	1.19	.86	1.14	1.00	1.19	....	1.19	1.19	.98
30-30.9	1.10	1.10	1.00	1.07	1.02	....	....	1.05	1.24	1.21	1.21	.88	1.16	1.02	1.21	$1.16	1.21	1.21	1.00
31-31.9	1.12	1.12	1.02	1.09	1.04	....	....	1.07	1.26	1.23	1.23	.90	1.18	1.04	1.23	1.18	1.23	1.23	1.02
32-32.9	1.14	1.14	1.04	1.11	1.06	....	....	1.09	1.28	1.25	1.25	.92	1.20	1.06	1.25	1.20	1.25	1.25	1.04
33-33.9	1.16	1.16	1.06	1.13	1.08	....	....	1.11	1.30	1.27	1.27	.94	1.22	1.08	1.27	1.22	1.27	1.27	1.06
34-34.9	1.18	1.18	1.08	1.15	1.10	....	....	1.13	1.32	1.29	1.29	.96	1.24	1.10	1.29	1.24	1.29	1.29	1.08
Bel. 35	....	....	....	....	....	$ .96	$ .91	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1.20	1.20	1.10	1.17	1.12	.98	.93	1.15	1.34	....	1.31	.98	1.26	1.12	1.31	1.26	1.29	1.29	....
36-36.9	1.22	1.22	1.12	1.19	1.14	1.00	.95	1.17	1.36	....	1.33	1.00	1.28	1.14	1.33	1.28	1.29	1.29	....
37-37.9	1.24	1.24	1.14	1.21	1.16	1.02	.97	1.19	1.38	....	1.35	1.02	1.30	1.16	1.35	1.30	1.29	1.29	....
38-38.9	1.26	1.26	1.16	1.23	1.18	1.04	.99	1.21	1.40	....	1.37	1.04	1.32	1.18	1.37	1.32	1.29	1.29	....
39-39.9	1.28	1.28	1.18	1.25	1.20	1.06	1.01	1.23	1.42	....	1.39	1.06	1.34	1.20	1.39	1.34	1.29	1.29	....
40,over	1.30	1.30	1.20	1.27	1.22	1.08	1.03	1.25	1.44	....	1.41	1.08	1.36	1.22	1.41	1.36	1.29	1.29	....

Column 1—Companies posting are Barnsdall, Bell, Champlin, Continental, Cushing, Derby, Bay, Eason, El Dorado, Cities Service, Falcon, Globe, Gulf, Johnson, National, Phillips, White Eagle, Stanolind, Sunray, Texas, Sun, Vickers and Wilcox.
Column 2—Anderson & Prichard, Carter, Cosco, Deep Rock, Magnolia, Mid-Continent, Pure, Rock Island, Shell, Sinclair, Skelly and Tide Water.
Column 3—All purchasers.
Column 4—Humble Oil & Refining Co. and Sinclair Oil Purchasing Co.
Columns 5, 6, 7 and 8—All purchasers.
Column 9—Humble Oil & Refining Co. and Sun Oil Co. Tide Water Oil Co.'s schedule starts at 35 degrees, $1.34 with 2-cent spread up to 40 and over at $1.44. (Raccoon Bend prices are for deep sand oil.)
Column 10—The Texas Co. (Gulf Refining Co. pays same prices up to and including 34 gravity, but continues its 2-cent spread up to 40 and over at $1.41.)
Column 11—Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Sun Oil Co.
Column 12—All purchasers.
Column 13—All purchasers (effective July 6, 1937).
Column 14—Magnolia Petroleum Co.
Column 15—Humble Oil & Refining Co. (effective July 6, 1937).
Column 16—Humble Oil & Refining Co.
Columns 17 and 18—Shell Petroleum Corp.
Column 19—Tide Water Oil Co.

New or Improved Equipment

Oil-Field Products in Hole Can Be Drilled Up if Necessary

The Security Engineering Co., Inc., Whittier, Calif., has perfected a new line of oil-field products for use underground which can be drilled up when occasion demands and are called Security drillable products. They are made of "Securaloy," a tough, strong metal alloy which machines, perforates and threads the same as steel. This new material drills up smoothly and quickly. Having a specific gravity only slightly greater than that of shale, it readily circulates out of the hole with the drilling fluid.

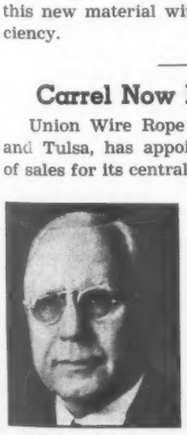
Security drillable products, the manufacturers say, open up new procedures, new safeties, and new efficiencies in oil-field production and testing methods. When set in producing zones they are designed to provide for future reconditioning or deeper development of wells, and to eliminate the hazards created by pieces of equipment which may become lost, wedged or frozen in the hole. In addition to conventional liner installations, these drillable products are said to permit new and more efficient production methods and to aid in the solution of oil-field problems by making possible procedures which heretofore have been impractical.

Besides drillable production liners, cementing equipment and production testers, a complete line of Security drillable accessories is available, including adapters, bullplugs, collars, liner-hangers, packers (all types), pipe, pipe-fittings, pipe-nipples, reducers, etc.

Although "Securaloy" can be drilled up with conventional types of piloted drilling-bits, Security Engineering Co., Inc., is manufacturing also a line of special drilling-bits engineered to drill up this new material with maximum speed and efficiency.

Carrel Now Manager of Sales

Union Wire Rope Corp., of Kansas City, Mo., and Tulsa, has appointed M. D. Carrel manager of sales for its central territory, with headquarters at 431 Pershing Drive, Chicago. Mr. Carrell has had wide experience in government and sales positions. Among his government posts, beginning in 1899, were those of secretary to General Wood, military governor of Cuba; secretary Dominican customs receivership established by President Theodore Roosevelt; deputy surveyor, Manila, Philippine Islands, engaged in special study of Philippine trade requirements; secretary of Puerto Rico by presidential appointment, and on several occasions acting governor; assistant vice president of American International Corp., reporting on business in Latin America; drafting officer for State Department, Washington; vice president Ulen & Co. and Ulen Engineering Corp., in charge of development of business in Latin America; director and economic advisor of Foreign Bond Associates, Inc.; regional manager of the Housing Division, P.W.A.



Marmon-Herringtons for Belgium

Marmon-Herrington Co., Inc., Indianapolis, Ind., has shipped 150 all-wheel-drive commercial pickup trucks to Belgium. The units are Marmon-Herrington Ford V-8 trucks completely re-engineered for equally efficient delivery of power to all wheels. They are expected to solve transportation problems presented by Belgian territory where off-the-highway work is an everyday requirement. The trucks were shipped "knocked down" to facilitate loading, and an engineer from the company was sent to supervise assembly in Belgium. They will be put into service through mud, snow, ice, sleet, sand, and rough terrain.

Emsco Announces Appointments

Emsco Derrick & Equipment Co. has appointed G. W. Walton vice president in charge of the Mid-Continent machinery division, and S. W. Webster

G. W. Walton *S. W. Webster*

manager of Mid-Continent machinery division sales and service. Both men are well known throughout the oil country, having had long experience in the development of sales of oil-field equipment. They have been associated with Emsco for many year. Mr. Walton will be stationed in Dallas, Tex. Mr. Webster will retain his present location in Houston, Tex., where Emsco is rapidly expanding its manufacturing facilities.

Stupakoff Bottom-Hole Gauges

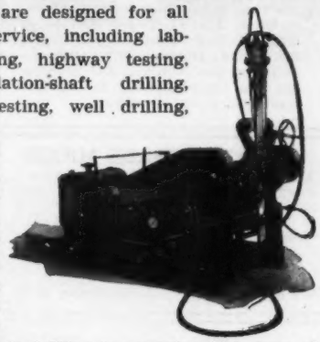
Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has been appointed sole distributor for the Stupakoff bottom-hole pressure gauge and bottom-hole sampler. The Stupakoff Laboratories, Pittsburgh, have been manufacturing and marketing these devices for several years, and they are said to have met with favor by production engineers and geologists. Col. W. F. Rockwell, president of Pittsburgh Equitable Meter Co., said: "A study of these devices has indicated that their design is sound and that they provide accuracy in making bottom-hole determinations."

Dunigan Store in Wichita Falls

Dunigan Tool & Supply Co., of Breckenridge, Tex., has opened a store in Wichita Falls, Tex., with Tom Bliss in charge.

Calyx Core-Drills in 17 Models Offered by Ingersoll-Rand

Seventeen models of Calyx core-drills are offered by Ingersoll-Rand Co., Phillipsburg, N. J. These drills are designed for all classes of service, including laboratory testing, highway testing, mine ventilation-shaft drilling, foundation testing, well drilling, elevator-plunger-hole drilling, mineral exploration, oil structure exploration, waterfront construction, and wire-saw equipment-shaft drilling in quarries. This type of drill is designed for boring hole in rock and concrete in sizes from 2¼ to 72 inches in diameter, and depths of 2,500 feet.



Hazards of Blasting Decreased

Atlas Manasite blasting-caps and electric blasting-caps are announced by Atlas Powder Co., Wilmington, Del., as representing an advance in safety for users of explosives. The company points out that no detonator should be called "safe," as it is intended to set off explosives. The new Manasite detonators, however, are designed to increase the margin of safety. They contain an initiating compound known chemically as hexanitromannite. As used in the Manasite detonators, this compound is much less sensitive to impact and friction. Full detonating power and other advantages are maintained.

Carnegie-Illinois Promotions

Carnegie-Illinois Steel Corp., Pittsburgh, Pa., has made William P. Andrews manager of sales in the Cincinnati, Ohio, district. Mr. Andrews, former assistant manager of sales in the Chicago district, takes the place made vacant by the death of Lawrence K. Slaback. T. Lane Watson, who succeeds Mr. Andrews in Chicago, has been in the service of United States Steel Corp. subsidiaries since he joined the former Carnegie Steel Co. in 1910.

Widdoes Named General Manager

W. Roy Widdoes has been appointed general manager of By-Products Steel Corp., Coatesville, Pa. Born in Coatesville in 1895, Mr. Widdoes attended the high school in that city and then joined Lukens Steel Co., Coatesville, in 1912 as a clerk in the time department. In 1915 he became associated with the Reading Railroad, but returned to the Lukens' organization later in the same year, serving in the purchasing department. In 1929 he was appointed assistant purchasing agent for Lukens. In 1937 Mr. Widdoes joined By-Products Steel Corp. as assistant to R. W. Moffett, president, and he served in that capacity until his recent appointment as general manager.

CLASSIFIED ADVERTISING

Patent Attorneys

JACK A. SCHLEY
PATENT LAWYER
Patents obtained — infringement practice in all Courts—oil field experience. 1807-11 Tower Petroleum Bldg., Dallas. 2014 Second Nat'l. Bank Bldg., Houston. 707 Insurance Building, San Antonio. 433 Munsey Building, Washington, D. C. Address any of these offices.

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I. BENJAMINS
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Drawings, Design Patents, Trademarks
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For Sale—Maps

1938 REVISED EDITION
MAP of State of Texas, Eastern N. M., parts of Southern Okla., SW Ark. and La., shows Oil and Gas Fields in color, Counties, County Seats, elevations, coordinated alphabetical index of counties and fields.
Price $1.00 postpaid

Write for descriptive folder of Oilfield and County Ownership Maps.
ZINGERY OIL MAP COMPANY
Fair Building Fort Worth

Leases and Drilling Blocks

SECURITY ABSTRACT COMPANY
El Dorado, Union County, Arkansas, Magnolia, Columbia County, Arkansas. Fee, Lease and Mineral ownership on short notice. Ownership maps.

LEASES, Royalties and drilling blocks throughout present hot play southern Arkansas. El Dorado Oil Exchange, Garrett Hotel Building, El Dorado, Arkansas.

DRILLING DEAL WANTED: 8,000 A. in Washita Co., Okla., centering around Secs. 19-30, Twp. 11, R. 15, and Secs. 24-25, Twp. 11, R. 16; 13 mi. NE of Cordell; next rental due March 31, 1939. H. H. KLASSEN, Box 55, REEDLEY, CALIF.

HAVE 500 acres, production on four sides. Good structure. Four sands. Will sell 1/32 interest $100. 1/2 interest $1600 and drill first well. Particulars Box 10, Kincaid, Kansas.

LEASES and Royalties bought and sold. V. V. Bull, 404 Exchange Bank Bldg., El Dorado, Arkansas.

I HAVE 2 Block of Leases, 410 Acres in 3 miles of producing well in Wayne County, Illinois, and a large Block in Hamilton County, Illinois. Will assign for reasonable price and drilling committment. George W. Hogan, McLeansboro, Illinois.

KANSAS Oil Leases Wholesale, 40 acre tracts. All active counties. MARGARET HAYNES, R. No. 3, N. Topeka, Kansas.

NEW MEXICO Oil Leases for sale, Wholesale. Inquiries invited. Write, Box 507, Las Vegas, New Mexico.

PROVEN offset lease in Oklahoma City field. Will sell $7,500 or consider drilling contract. R. Z. Glass, 1901 Commerce Street, Dallas, Texas.

CORPORATION desires to acquire additional production. Give number of acres and wells and average production for thirty days. Address Box J-400, The Oil and Gas Journal, Tulsa, Oklahoma.

WHY WASTE TIME

and money dickering around when you can reach your prospects through the medium they have chosen themselves?

An advertisement in these columns will place your message before the wealthiest and most progressive group of men in the world—*OIL MEN*—the readers of The Oil and Gas Journal.

Put the Journal on your payroll—make it a part of your sales force. It will outsell anything you have tried before.

Classified Department

The Oil and Gas Journal

TULSA, OKLAHOMA

Leases and Drilling Blocks

SUBSURFACE HIGH
Thirty thousand acres practically solid under oil and gas lease in Tallahatchie County, Mississippi.
Have favorable subsurface geological report on this area from H. D. Easton, Shreveport, Louisiana, and J. V. Howell, formerly with Marland Oil Company.
From logs of wells heretofore drilled the following producing horizons should be encountered in this area:
Nacatoch ..... 1750 below sea level
Blossom ..... 2750 below sea level
Woodbine ..... 3385 below sea level
Lower Cretaceous .. 3650 below sea level
Will give free shooting rights for geophysical exploration and oil and gas lease on all necessary acreage in event well is drilled, at cost of securing leases.
If interested write or wire C. E. Harris, El Dorado, Arkansas.

Tex., La., Okla., Ark., Kas., N. Mex., producing and potential royalties, leases, drilling blocks, lands, bought-sold. American Investment Co., Houston.

I OWN 3,000 acres free in N. Pittsburg and Atoka Cos., Okla. 40 to 1000 A. tracts. No trades. Cash sale, lease or royalty, $5 to $25 per A. Townsite on 2 RRs. near production. J. E. Cavanagh, Baker, Ore.

Leases and Drilling Blocks

LOUISIANA GULF COAST OIL DEALS
Ville Platte, Evangeline Parish, Oil Field Area: 136 acre lease S14, T14S, R2E, $15 acre. 85 acre lease 60 day drilling clause, 3/16th override near production; yours if you will drill. De Soto Parish 40 acre lease S16, T10N, R14W, $10 acre. Pike County, Miss., 10,000 acres T2N R7-8E with excellent geophysics; will sell half interest with guaranteed 3500 foot well for $17,500. Other propositions. Leases and royalties bought and sold. Confidential representation. Oil Dept. Robert L. Smart Company, 328 Whitney Building, New Orleans, Louisiana.

HAVE SOLID block oil leases, in Massac County, Illinois, on structure. Sell or make drilling contract. Low rentals. J. N. Lawler, 601 S. Summit, Girard, Kansas.

New Mexico OIL LEASES WHOLESALE
40 acres at a time.
Roy G. Barton, Clovis, New Mexico.

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up. Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES—ROYALTY. Few small tracts around the Dobbs Oil Co.'s Ordovician Wildcat Eastland County block. Low price. E. CROFT, Proctor, Texas.

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	*1 time*	*$5.00*
1 Inch	*13 times*	*4.50 per inch*
1 Inch	*26 times*	*4.00 per inch*
1 Inch	*52 times*	*3.50 per inch*

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

CLASSIFIED

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgement is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	*$1.05*	*$1.80*	*$2.55*	*$3.30*	*7 Lines*	*$2.45*	*$4.20*	*$5.95*	*$7.70*
4 Lines	*1.40*	*2.40*	*3.40*	*4.40*	*8 Lines*	*2.80*	*4.80*	*6.80*	*8.80*
5 Lines	*1.75*	*3.00*	*4.25*	*5.50*	*9 Lines*	*3.15*	*5.40*	*7.65*	*9.90*
6 Lines	*2.10*	*3.60*	*5.10*	*6.60*	*10 Lines*	*3.50*	*6.00*	*8.50*	*11.00*

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL

Tulsa, Oklahoma

Leases and Drilling Blocks

50 SELECT buyers royalties or lease $1.00. State choice and locality. Oil Industry Mailing List Co., Tulsa Loan Building, Tulsa, Oklahoma.

ECTOR CO. oil leases—Texas farms—Dallas homes, all kinds. Write your wants. Anderson, 1014 S. Cumberland, Dallas, Texas.

160 ACRES joining production, excellent chance for gas, gathering line one mile. R. V. FITCH, Paola, Kansas.

Help Wanted

SALESMAN
If you are now employed selling engineering supplies or a technical service to the production division of the oil industry; if you are stymied and want to take a chance on more rapid advancement with a nation-wide firm well known to the industry; if you have an enviable record as a salesman; if you have outstanding executive, organization and management ability and can prove it; if you are willing to live in Tulsa but spend most of your time in the field promoting district sales against aggressive competition; if your salary requirements are modest—then write a brief but complete letter to the following box address telling us all about yourself. Your first letter will be strictly confidential but if anything comes of it your present employer must be willing to let you go.
ADDRESS BOX J-391
The Oil and Gas Journal,
Tulsa, Oklahoma.

ENGINEER—CARBON BLACK
WANTED engineer able to furnish designs for construction carbon black factory (Channel process). Exact designs of hothouse with all necessary apparatus and auxiliary machinery and with indication of suppliers required. Apply, stating conditions to: D. Watson & Company, 430 Lafayette Street, New York City.

Situations Wanted

ENGINEER thoroughly experienced in construction, operation and maintenance of modern refineries including combination topping and cracking units, vacuum eqpt. and mfg. of light and heavy oils. Young man. Address Box J-370, The Oil and Gas Journal, Tulsa, Oklahoma.

The Classified Section of The Oil and Gas Journal, for over 30 years the market place of the oil industry.
Reading this section every week can become a profitable habit.—Cultivate it.
Classified Department
THE OIL AND GAS JOURNAL

GEOLOGIST—core driller. Graduate geologist with seismograph core drilling experience desires position. Young, sober, reliable, go anywhere. Address Geologist, 1215 Kearney, Manhattan, Kansas.

PILOT—Desires position with oil company or independent oil operator flying multi-engine or airline type equipment. Advisory capacity on purchase of equipment. Ten years' experience. 9800 hours with major airline. Age 35. Hold airline ratings. E. E. Matucha, 3938 Howard, Western Springs, Illinois.

CHIEF Estimating Engineer employed by major oil company, graduate engineer, 39. Considerable practical large construction management background. Specialist coordinating construction operations with estimating department. Good reason for desiring change. Minimum starting salary $350.00 per month. Address Box J-402, The Oil and Gas Journal, Tulsa, Oklahoma.

Mailing Lists

Royalty Lists. Unit Holders Lists. Oil Industry Mailing Lists covering every branch. Oil Industry Mailing List Co., Tulsa Loan Building, Tulsa, Oklahoma.